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# WAR MACHINE

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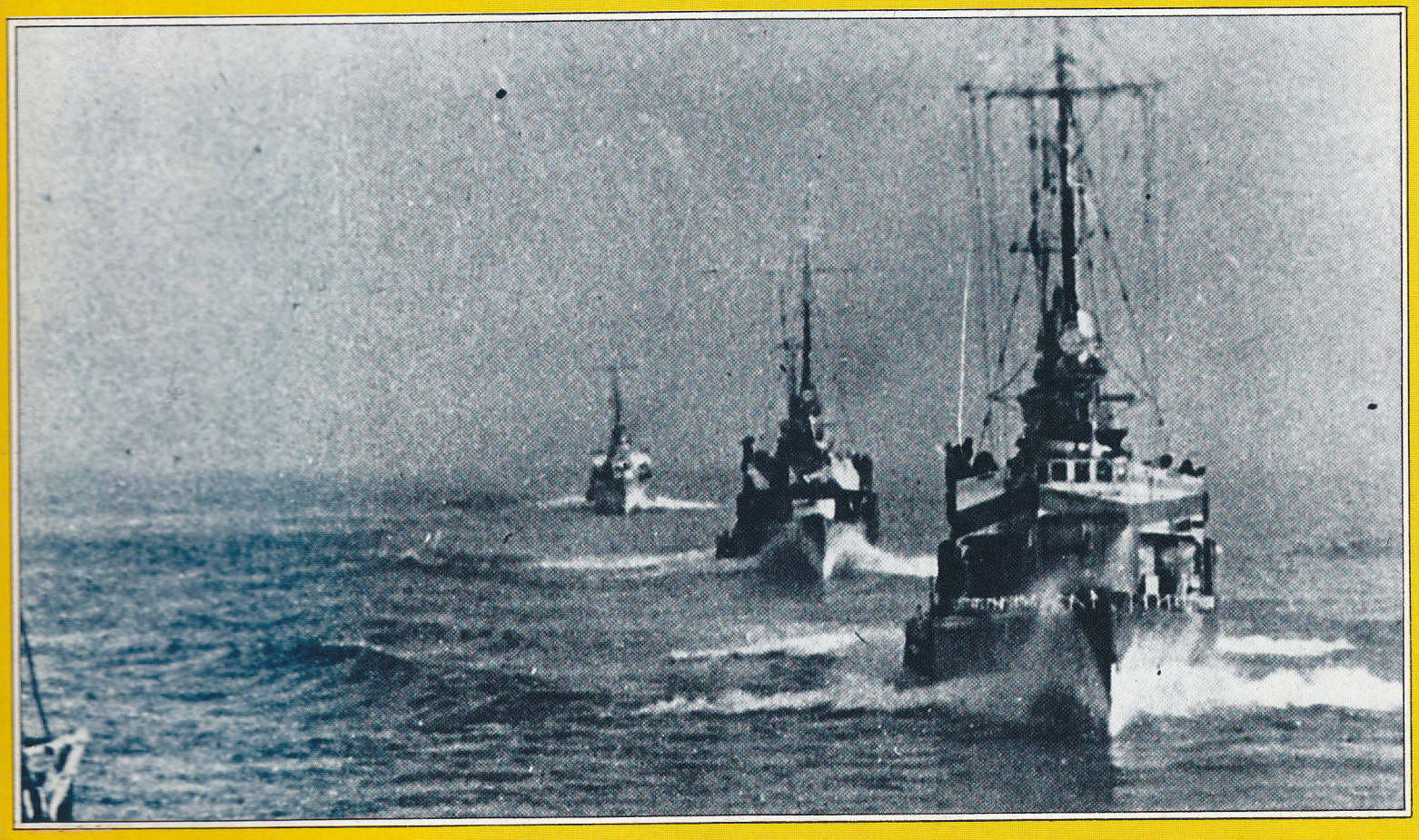

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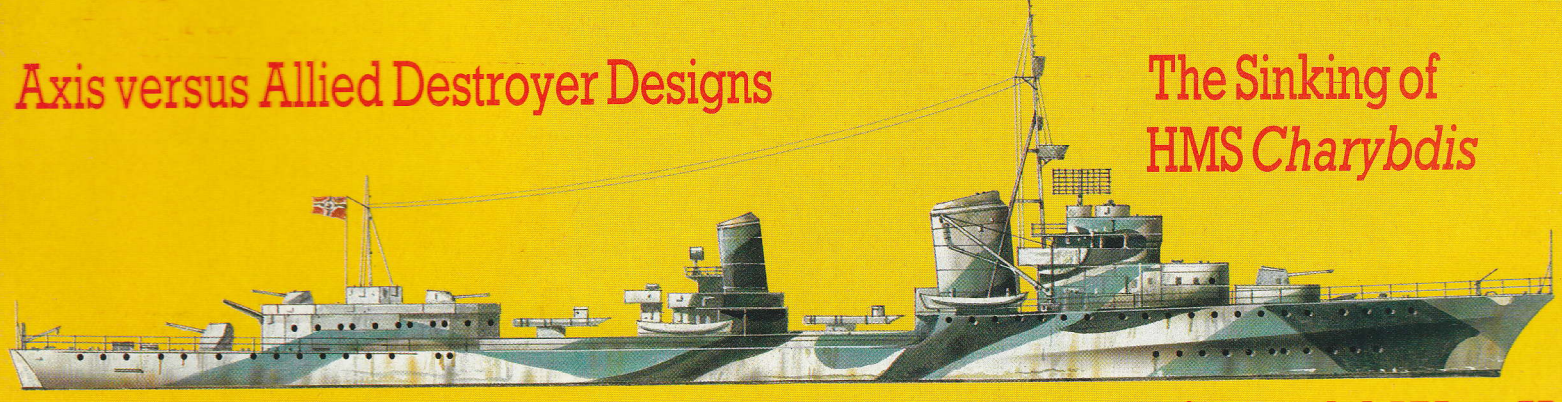

A fully illustrated guide to Axis Destroyers of World War II

# WAR MACHINE

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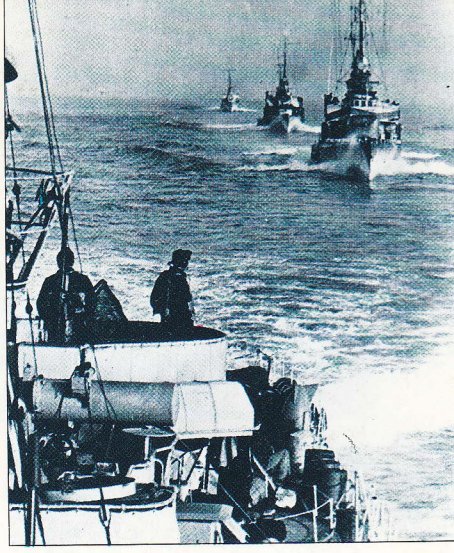
# Axis Destroyers of World War II



***Destroyers were the most active surface units of the Axis fleets. The Japanese possessed the finest destroyers in the world; these won a series of dramatic victories across the Pacific. In European waters, German destroyers preyed on the Soviet convoys while in the Mediterranean the Italians revealed a talent for anti-submarine warfare.***

*German torpedo boats are seen during a foray into the Channel. Germany built 43 destroyers and 48 torpedo boats before May 1945, but Hitler never appreciated the potential of the Kriegsmarine surface fleet, preferring to rely on the U-boats.*

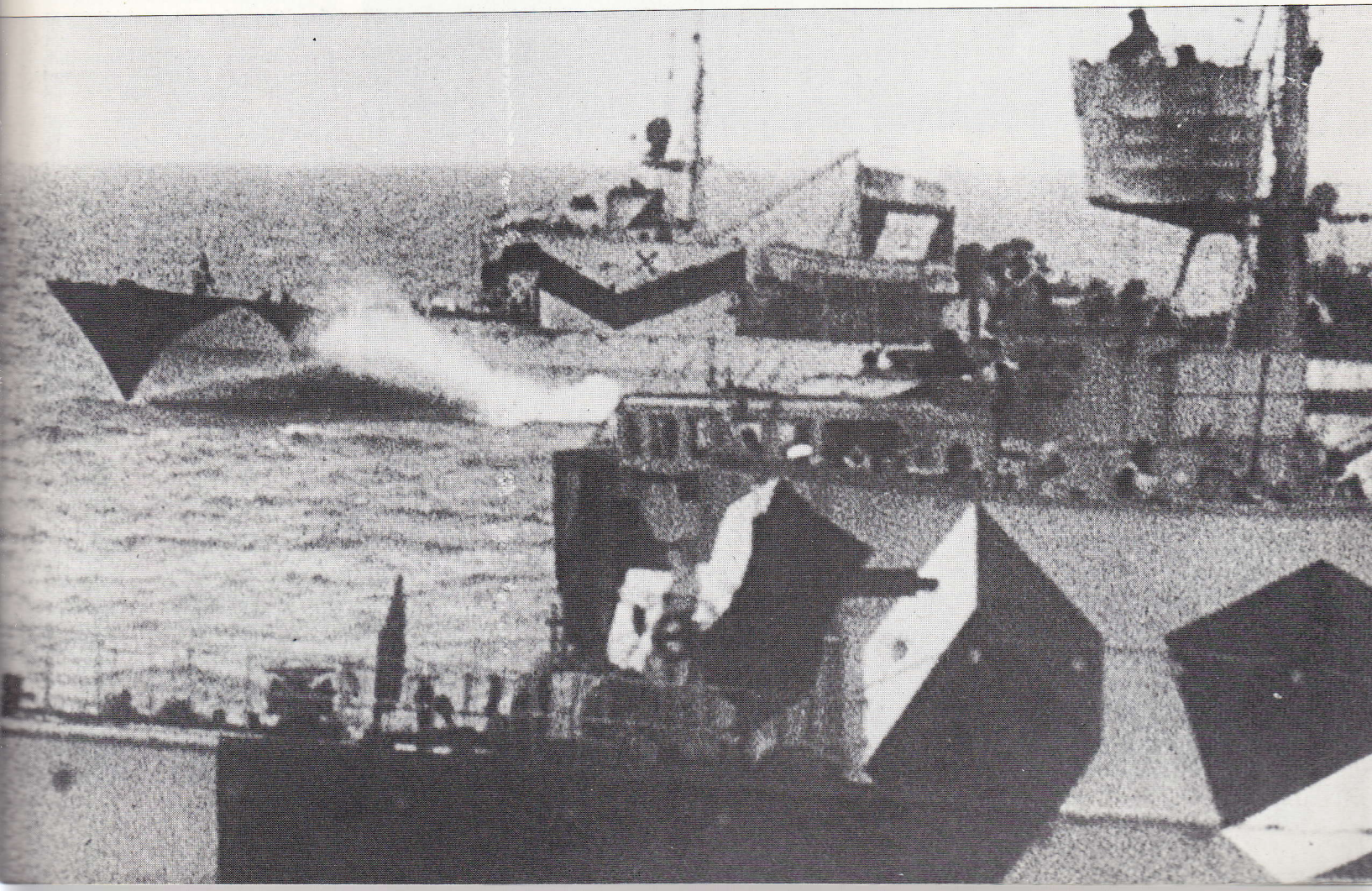
All three of the major Axis fleets started World War II with not inconsiderable destroyer forces but found, like the British, that the attrition rate was high, particularly when the ships were used for duties other than those for which they had been designed. This occurred most of the time.

German ships tended to be overambitious, as the result of the twin requirements of meeting (officially at least) treaty limitations on displacement, while not appearing inferior on paper to the French ships seen as the inevitable enemy. British equivalents may always have appeared more modest, but they could always fight their armament in a seaway, something that none of the larger German ships could boast. Following their losses in Norway, the German destroyer forces made little further impact on the naval war.

The Japanese used their many ships both in their designed fleet context and in other independent roles, largely in support of the army. Their supreme achievement was in the vicious six-month dispute for Guadalcanal. Not only did the destroyers make contention possible at all but, in doing so, made the island a catalyst, enabling them to take the war to the American fleet. That the policy of attrition against so powerful and numerous an enemy was flawed from the outset was a top-level strategic blunder and in no way detracted from the toughness and resource of the Japanese destroyer skippers.

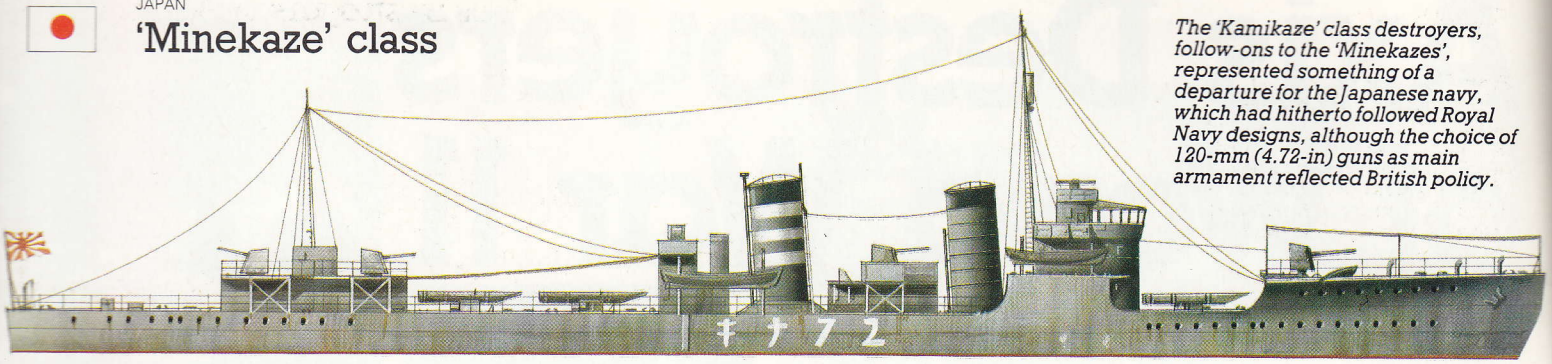
Though never sacrificing their main weapon, the 610-mm (24-in) torpedo, the Japanese ships shed much of their main battery firepower in order to accommodate extra AA armament and to give space for troops, equipment and supplies. A similar role fell to many Italian destroyers, which also could just make the return trip to their beleaguered comrades in North Africa within the hours of darkness. Their contribution was useful but, again, losses were high because (as the British involved in the Tobruk siege discovered) ships were of necessity predictable in their timetable. Nevertheless it was preferable to sharing the big ships' usual routine of swinging around the buoy. Most successful of the Italians were the 'torpedo boats', which proved adept at anti-submarine warfare.

*Two of the 13 torpedo boats that escorted the pocket battleships* Scharnhorst *and* Gneisenau *and the heavy cruiser* Prinz Eugen *during their dramatic dash through the Channel in February 1942. Unable to remain in Brest because of the RAF, the German squadron made for Norway.*



JAPAN

# 'Minekaze' class



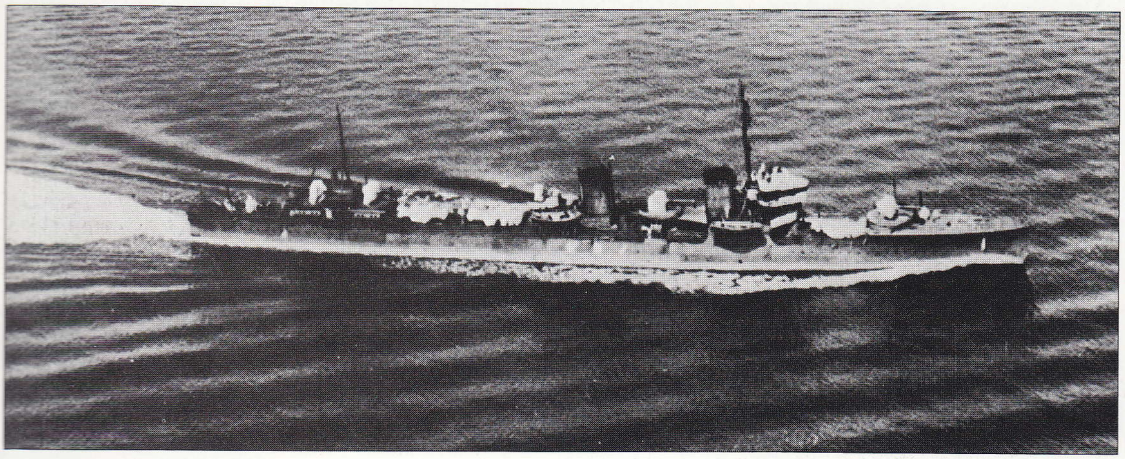
*The 'Kamikaze' class destroyers, follow-ons to the 'Minekazes', represented something of a departure for the Japanese navy, which had hitherto followed Royal Navy designs, although the choice of 120-mm (4.72-in) guns as main armament reflected British policy.*

At the end of World War I the Japanese had the concept of first- and second-class destroyers, the one being a scaled-up version of the other. Before this the Japanese navy had either bought British ships or copied them closely, but with the 21 **'Momi' class** and 15 **'Minekaze' class** second- and first-class destroyers they produced something a little more original, following an earlier German lead in providing a well between the short forecastle and the bridge structure. Destroyers of the time were quite short overall and, still without the benefit of a superimposed gun on a deckhouse forward, were prone to bury their noses in a short head sea. At best this made life difficult for the bridge personnel, and at worst there was danger of the structure being flattened or swept clean. The forward well acted as a natural break and, as it moved things aft, also provided space for one set of torpedo tubes. The 'Minekazes', all launched between 1919 and 1922, were the ***Akikaze, Hakaze, Hokaze, Minekaze, Namikaze, Nokaze, Numakaze, Okikaze, Sawakaze, Shiokaze, Tachikaze, Yakaze*** and ***Yukaze***.

The classes introduced the 533-mm (21-in) torpedo tube to Japanese destroyers, twins in the 'Momis' and triples in the 'Minekazes' (and in the nine similar **'Kamikaze' class** follow-ons). Both types carried their 120-mm (4.72-in) guns (the calibre itself reflecting earlier British influence) high on deckhouses and forecastle, enabling them to be fought in poor conditions when the weather deck was likely to be swept by loose water.

By World War II standards the 'Minekazes' were both small and old and, with the shortage of escorts being quickly and dramatically exploited by American submarines, most of the class shed half their main-calibre guns, minesweeping gear and all but a pair of torpedo tubes to mount depth-charge throwers and ammunition, together with an ever-increasing number of light AA guns.

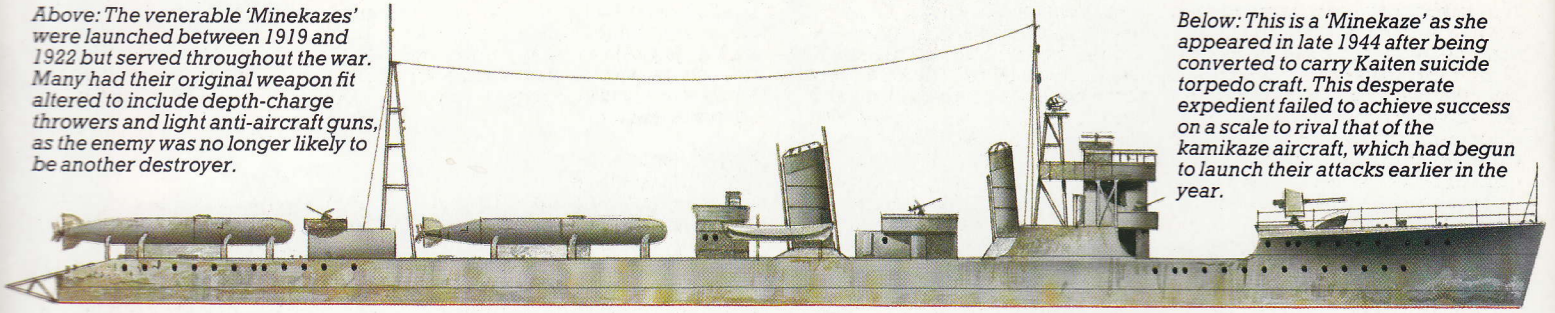
Four units, after the fashion of some older British destroyers, had a very thorough conversion to convoy escorts with some boiler capacity sacrificed for extra bunker space. One, the *Sawakaze*, was reportedly fitted with an ahead-firing nine-barrelled AS rocket-launcher. Nine of the class themselves fell victim to submarine attack, the nameship being sunk by the USS *Pogy* in the East China Sea early in 1944 at a time when destroyers were made priority torpedo targets.



*Above: The venerable 'Minekazes' were launched between 1919 and 1922 but served throughout the war. Many had their original weapon fit altered to include depth-charge throwers and light anti-aircraft guns, as the enemy was no longer likely to be another destroyer.*

## Specification
### 'Minekaze' class

**Displacement:** 1,215 tons standard and 1,650 tons full load
**Dimensions:** length 102.5 m (336.3 ft); beam 9.0 m (29.5 ft); draught 2.89 m (9.5 ft)
**Propulsion:** two sets of geared steam turbines delivering 28709 kW (38,500 shp) to two shafts
**Speed:** 39 kts
**Endurance:** 6670 km (4,145 miles) at 14 kts
**Armament:** four single 120-mm (4.72-in) guns, two machine-guns, two triple 533-mm (21-in) torpedo tube mountings and up to 20 mines
**Complement:** 148



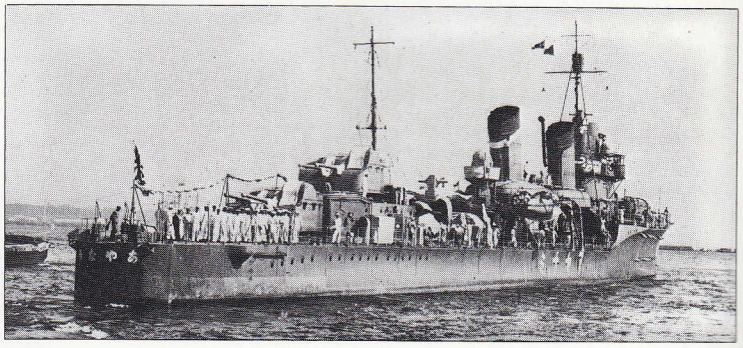
*Below: This is a 'Minekaze' as she appeared in late 1944 after being converted to carry Kaiten suicide torpedo craft. This desperate expedient failed to achieve success on a scale to rival that of the kamikaze aircraft, which had begun to launch their attacks earlier in the year.*

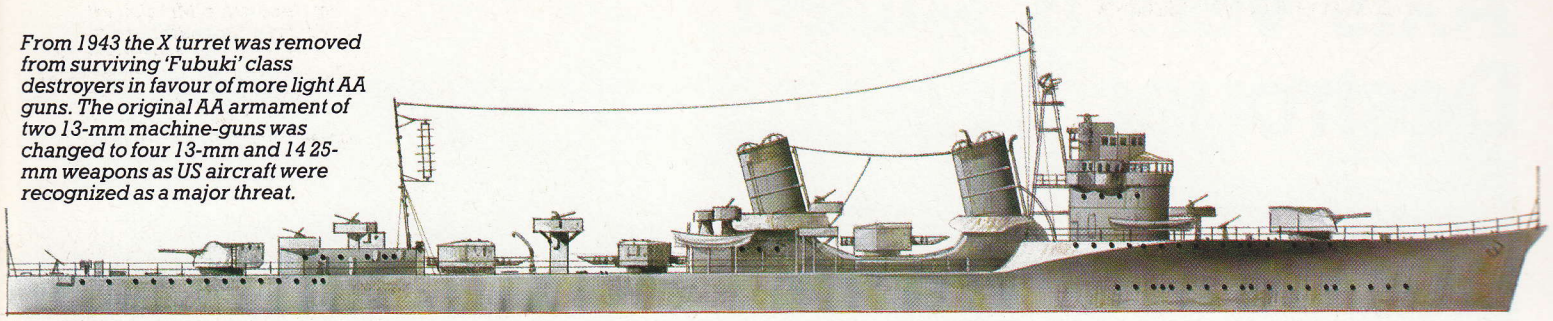
JAPAN

# 'Fubuki' class

At the time of their construction, the 20 **'Fubuki' class** destroyers (launched in 1927-31) were among the trend-setters of the destroyer world. They had been preceded by the 12 **'Mutsuki' class** destroyers, which had further refined the 'Kamikazes' with their strong Anglo-German influences. Only then did the Japanese designers go fully their own way and produce a type of destroyer so advanced that it was still formidable 15 years later at the end of World War II, besides influencing all the classes that followed it. Firstly a significant increase in size was accepted to accommodate more top-weight. The awkward forward well was discontinued in favour of a more conventional continuous forecastle, the freeboard of which was increased, and the bridgework was both strengthened and raised to reduce water impact damage. In the preceding class

*The 'Fubuki' class revolutionized destroyer design by substantially increasing the size of the vessel. This reduced the vulnerability to heavy seas and enabled them to carry a formidable armament of six 127-mm (5-in) guns and nine 610-mm (24-in) torpedo tubes.*



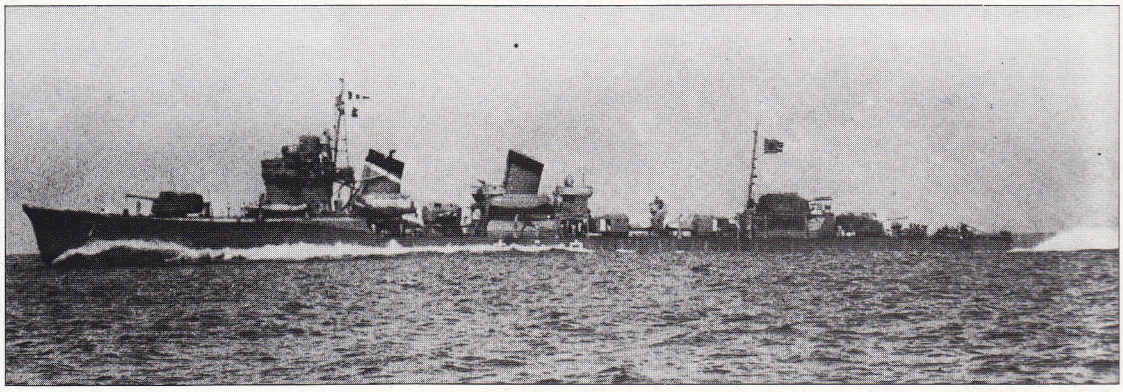


*From 1943 the X turret was removed from surviving 'Fubuki' class destroyers in favour of more light AA guns. The original AA armament of two 13-mm machine-guns was changed to four 13-mm and 14 25-mm weapons as US aircraft were recognized as a major threat.*

the 610-mm (24-in) torpedo had been introduced and the 'Fubukis' carried three triple mountings, with stowage for nine spare torpedoes. This early commitment to the torpedo was obvious, yet Allied forces were constantly surprised by the bold and ready manner in which the Japanese were prepared to use them in World War II.

A further innovation was the uprating of the main calibre guns to 127 mm (5 in) and mounting these in fully enclosed twin gunhouses, one forward and two aft to lower their combined centre of gravity. In those units launched from 1929 the elevation of the main battery was increased to 70°, an angle unmatched in their day to give a dual-purpose capacity that was little short of visionary.

This splendid class was also of high power, the 37285 kW (50,000 shp) being good for 38 kts. Unfortunately, this was bought at the expense of hull strength, and a degree of tenderness. Service during the 1930s highlighted these failings, and the ships were heavily strengthened and given extra ballast. This added another 400 tons to the displacement, slowing them by 4 kts. Further topweight was saved later by not carrying spare torpedoes and landing the superfiring after mountings in favour of a very necessary enhancement to the AA defences. The class served widely in all theatres, only one unit surviving the war. The ships were the ***Akebono, Amagiri, Asagiri, Ayanami, Fubuki, Hatsuyuki, Isonami, Miyuki, Murakumo, Oboro, Sagiri, Sazanami, Shikinami, Shinonome, Shirakumo, Shirayuki, Uranami, Ushio, Usugumo*** and ***Yugiri***.



Ushio *was the only one of the 20 'Fubuki' class to survive the war. Seen here just after her 1936 refit, she was the last 'Fubuki' to be launched, and her 127-mm (5-in) guns had their elevation increased from 40 to 75 degrees: a remarkably innovative feature.*

### Specification

**'Fubuki' class** (as built)
**Displacement:** 2,090 tons standard
**Dimensions:** length 118.35 m (388.3 ft); beam 10.36 m (34.0 ft); draught 3.2 m (10.5 ft)
**Propulsion:** two sets of geared steam turbines delivering 37285 kW (50,000 shp) to two shafts
**Speed:** 37 kts
**Endurance:** 8700 km (5,406 miles) at 15 kts
**Armament:** three twin 127-mm (5-in) guns, two machine-guns, three triple 610-mm (24-in) torpedo tube mountings with nine reloads, and up to 18 mines
**Complement:** 197

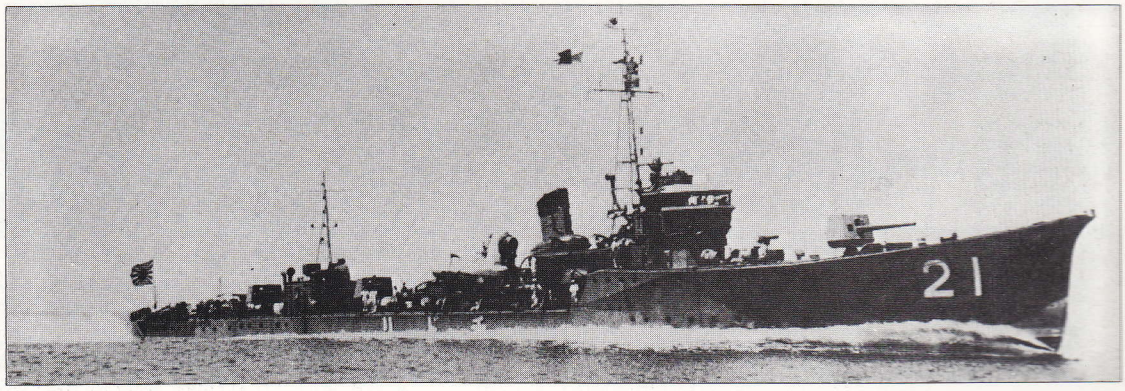
JAPAN

## 'Tomodzura' and 'Ootori' classes

While it may demonstrate the ingenuity of the naval architect, warship design rarely profits from attempting an ambitious fit on a limited displacement, yet this is just what the interwar treaties brought about. The Japanese had operated a class of first-class torpedo boat (or coastal destroyer) up to the mid-1920s, but had not repeated the type until the four-ship **'Tomodzura' class**, ordered in 1931 to top-up the Japanese tonnage entitled under the London Treaty. The value of such small craft is evident when it is remembered that Japanese interests looked not only eastward over the Pacific but also at the mainland Orient across the shallow and unrestricted Sea of Japan. At 650-ton standard displacement, these ships carried a very ambitious armament of a single and a twin 127-mm (5-in) gunhouse and two pairs of 533-mm (21-in) torpedo tubes, all on a fine hull able to achieve 30 kts on a modest 8203 kW (11,000 shp). The weakness of this maritime conjuring was made rudely evident when the nameship capsized in heavy weather in 1943. As the hulk did not founder it was recovered, heavily modified (as were the remainder of the class) and recommissioned.

The lesson was timely as regards the whole fleet but particularly so in the case of the follow-on **'Ootori' class** boats, then about to be ordered. Surprisingly, though the latter were enlarged their slender proportions hardly changed, the length:beam ratio still being nearly 11:1. As a comparison, the 'Ootoris' were longer than either a British Type II 'Hunt' (86.1 m/282.5 ft) or an American DE (88.1 m/289 ft), yet the beams of the latter were 9.6 m (31.5 ft) and 10.7 m (35 ft) respectively. At the same time the Japanese had eventually to accept a greatly reduced armament of two 120-mm (4.72-in) guns and only one pair of tubes. The price of a destroyer's speed was, indeed, high.

Although eight of the 16 units projected were cancelled, those completed (the ***Hato, Hayabusa, Hiyodori, Kari, Kasasagi, Kiji, Ootori*** and ***Sagi***, all launched in 1935-7) were reportedly good AS ships, though both the *Sagi* and *Hiyodori* were sunk separately by the American submarine USS *Gunnel* on the same patrol. The nameship was sunk off Saipan in June 1944 with no less than 13 other ships when a convoy was totally overwhelmed by American carrierborne aircraft.




Chitori, *second ship of the 'Tomodzura' class, is seen here off Maizuru in 1934, the year the nameship capsized while on running trials due to the designers' attempt to cram an excessive armament on to a vessel of modest displacement.*

### Specification

**'Ootori' class** (as built)
**Displacement:** 840 tons standard and 1,050 tons full load
**Dimensions:** length 88.35 m (289.9 ft); beam 8.2 m (26.9 ft); draught 2.84 m (9.3 ft)
**Propulsion:** two sets of geared steam turbines delivering 14168 kW (19,000 shp) to two shafts
**Speed:** 30 kts
**Endurance:** 7400 km (4,598 miles) at 14 kts
**Armament:** three single 120-mm (4.72-in) and one 40-mm AA guns, and one triple 533-mm (21-in) torpedo tube mounting
**Complement:** 112

# Axis versus Allied Destroyer Design

*The Japanese devoted far more thought to destroyer tactics than did any of their enemies and, firing extravagant salvoes of their deadly 'Long Lance' torpedoes, they rapidly achieved mastery over Allied light forces in the Pacific. By contrast, Italian vessels were placed in an unenviable strategic position, and the potential of the German flotilla was never really appreciated in Berlin.*

Most of the main warring fleets possessed goodly numbers of destroyers, and surprisingly many were of flawed design, largely the result of overambition on treaty-limited displacements. The Allies were probably better off in this respect, only the Americans having to wage continual war against a naval staff that appeared to want to sink its ships under the sheer weight of torpedo tubes, weapons which for long they seemed loath to use freely. The British had probably got the balance about correct, with their cruisers acknowledging limitations to get the large number of hulls seen as necessary for world-wide duties. In both types the temptation was avoided (except with the 'Tribals') to add armament to the limit simply to match a foreign precedent. This was perhaps fortunate as the rather modest and austere results proved to have adequate all-round ability; while not being exceptional in any one direction, they could be relied upon to be usable in any condition.

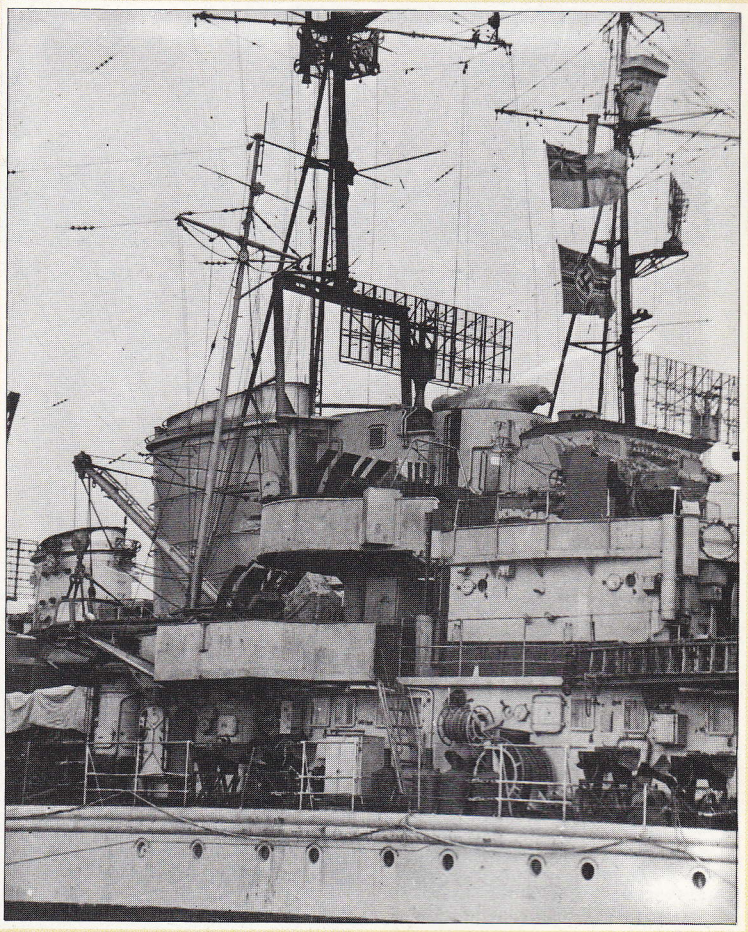
Between the world wars the French exerted great influence through the magnificent series of big ships they could afford to build as they were not tied to obtaining the greatest number of hulls on their allocated total displacement figure. The UK did not respond as she could not afford to devote so much tonnage to comparatively few ships and, in any case, did not view the French as serious candidates for a maritime war.

While the big Frenchmen were not totally devoid of topweight problems, they really looked the part and encouraged both the Italians and Germans to build in a like image. Of these, the former approached the 'problem' more logically, producing the 'Capitani Romani', which were more scout cruisers than destroyers but had both the speed and firepower to challenge any of their French counterparts. Had they only been built in time they could have posed a major threat to those British Mediterranean convoys which lacked air cover. The Italians were also producing a true large destroyer class in the so-called 'Medaglie d'Oro', but again these ships never materialized in time. As in the usual capricious ways of war, the French ships that had inspired them were no longer a threat after the end of 1942, while the Italians found themselves instead fighting the British, a situation which in the 1930s would have appeared a remote possibility after the latter's craven era of general appeasement at almost any cost.

The Italian fleet destroyer was an endangered species from the outset, the confined waters of the Mediterranean sea exposing it to every sort of attack (carrier- and land-based air, surface ship and submarine) without sufficient searoom in which to lose itself.

Very few were actually sunk while engaged in fleet action, many fell victim to the endless requirements of the North African supply run but, for the greater part, it was sheer attrition from all causes. To be fair, the British suffered the same problems and also took many losses in these waters.

From the point of view of damage inflicted upon the enemy, the Italian small destroyers, or torpedo boats, were far more effective than the larger fleet units, proving themselves adept at countering the British submarines that were playing havoc in the central Mediterranean. Like their larger compatriots, however, they were little disposed to create situations that would allow them to exploit their principal weapon, the torpedo. One reason for this was the insistence, probably the result of topweight problems, on fitting the small 450-mm (17.72-in) torpedoes. These had half the range and considerably less speed than the 533-mm (21-in) weapons, necessitating a closer approach to the target. This was an unhealthy habit by daylight but, where it could have been possible by darkness, the Italians found themselves up against radar-laid gunnery, to which they had no answer.

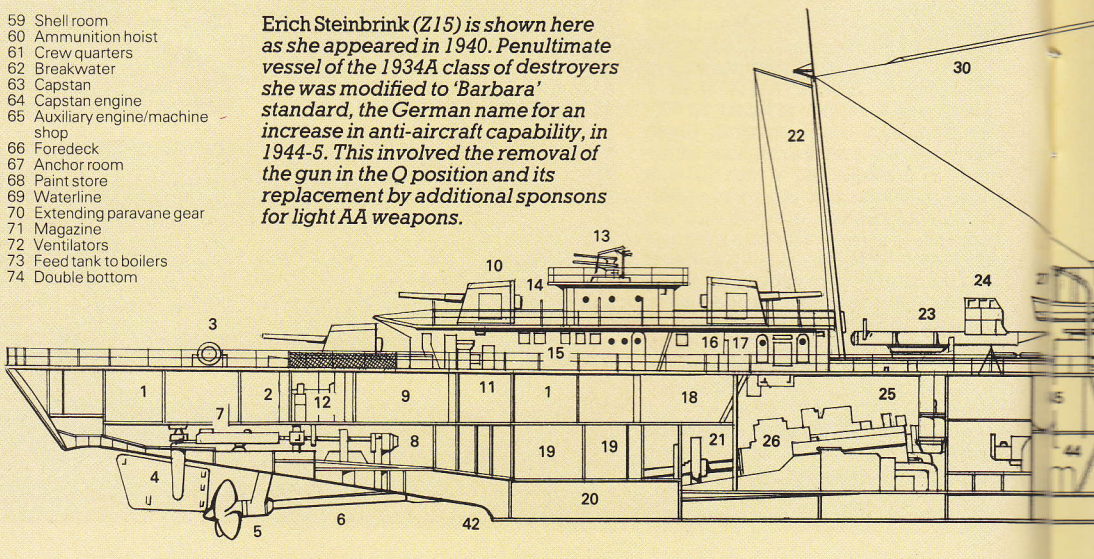


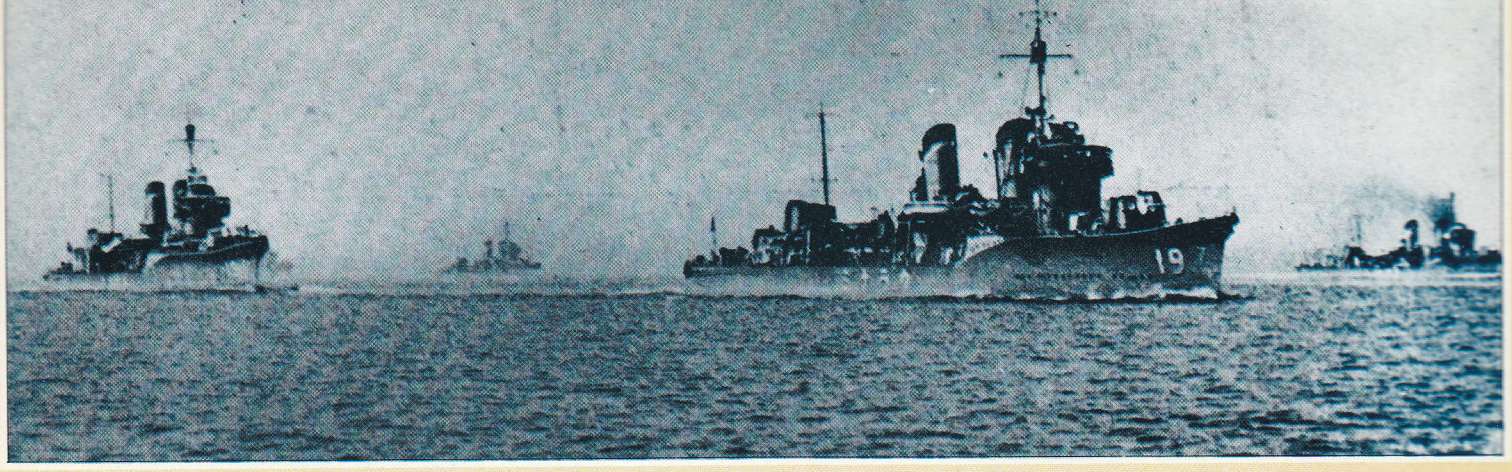
*Below: The British Ensign flies above the swastika on a German destroyer after the surrender at Kiel in 1945. The later German destroyers were large vessels and overgunned, which made them poor seaboats. German vessels were also burdened with a complex, unreliable propulsion system.*

## *Erich Steinbrink* (Z15) class destroyer cutaway drawing key

1 Store
2 Auxiliary engine room
3 Capstan
4 Balanced rudder
5 Twin propellers
6 Shaft
7 Steering gear
8 Steering engine
9 Machine shop
10 127-mm (5-in) 45-calibre C34 gun
11 Ammunition hoist
12 Turret training engine
13 Four-barrelled 2-cm AA gun
14 Aft wireless room
15 Wardroom/officers' quarters
16 Sick bay
17 Captain's cabin
18 Engineers' quarters
19 Fuel
20 Wing passage
21 Reduction gear
22 Mainmast
23 Four 533-mm torpedo tubes (centre line)
24 Torpedo tube operator's screen
25 Turbine room
26 Turbine
27 Lifeboat
28 Searchlight platform
29 Searchlight
30 Wireless aerial
31 Superheater
32 Funnel cap
33 Funnel casing
34 Twin 2-cm AA guns
35 Launch
36 Derrick
37 Funnel uptake
38 No. 1 boiler room
39 No. 2 boiler room
40 No. 3 boiler room
41 No. 4 boiler room
42 Keel
43 Engine room
44 Main engine
45 Fresh water tank
46 Tripod foremast
47 Ladder
48 Lookout position
49 Foretop
50 Surface warning and gunnery radar
51 Radar room
52 Radio direction finder
53 Target bearing transmitter
54 Bridge
55 Wireless room
56 Control room/chart room
57 Companionway
58 Crew's mess
59 Shell room
60 Ammunition hoist
61 Crew quarters
62 Breakwater
63 Capstan
64 Capstan engine
65 Auxiliary engine/machine shop
66 Foredeck
67 Anchor room
68 Paint store
69 Waterline
70 Extending paravane gear
71 Magazine
72 Ventilators
73 Feed tank to boilers
74 Double bottom

Erich Steinbrink *(Z15) is shown here as she appeared in 1940. Penultimate vessel of the 1934A class of destroyers she was modified to 'Barbara' standard, the German name for an increase in anti-aircraft capability, in 1944-5. This involved the removal of the gun in the Q position and its replacement by additional sponsons for light AA weapons.*

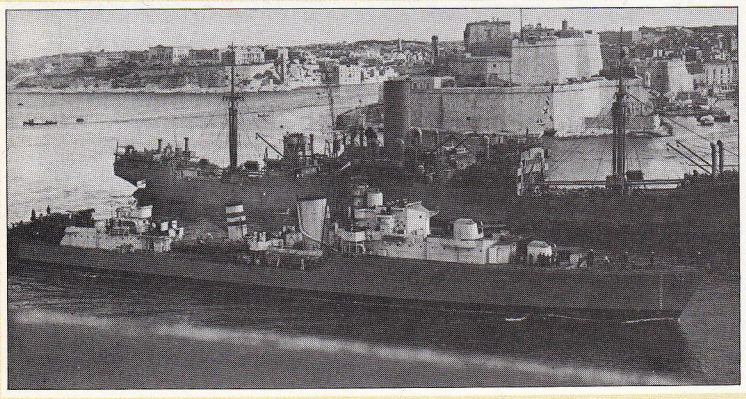




*Above: The innovative 'Fubuki' class destroyers. By the outbreak of war the Japanese led the world both in the design and use of destroyers; their emphasis on a powerful torpedo armament paid dividends in 1942 and 1943 as they consistently outmatched Allied destroyers.*

Italian losses in destroyers were very high. As with the French, they reflected a war of varying fortunes and allegiances, fighting both for and against the Allies while taking casualties in both cases. While, in the fleet context, they appeared poorly led and motivated, achieving little, they worked well and gave valuable service when individually tasked. This reflected the Italian character in general, best given to opportunity to work alone rather than subordinating highly individual personality to group discipline.

So little does one hear of German destroyer activity that one could be excused for assuming that they built few. This was not so, 43 destroyers and 48 torpedo boats being completed before May 1945. The German high command never appreciated the potential of its surface fleet and the destroyers, as part of it, spent the war heavily underutilized.



*Above: HMS* Sikh, *seen leaving Grand Harbour in Malta, was one of the 'Tribal' class of destroyers which the Royal Navy ordered in direct response to the threat posed by the heavily armed 'Fubukis'. Unlike their prospective Japanese opponents, they relied on guns rather than torpedoes.*

Recommencing destroyer construction in the early 1930s after a 15-year break, the Germans produced in the 'Maass' type a very conventional ship. Yet it was well armed, of adequate size and effective. It could outperform the contemporary British destroyer but, like it, appeared perhaps nondescript. For the British this was adequate, but the Germans looked for more dash, feeling the need to respond to French practice. The result was large and overgunned ships that were poor seaboats, suffering not only from excessive topweight but unreliable guns and, worse, unreliable machinery.

The latter resulted from the other beguiling principle that high steam pressures mean compact machinery; in practice it means endless technical problems (a path along which the Americans were still toiling in the 1960s) and the stimulant to develop plans for destroyers unique in having combined steam and diesel propulsion and, finally, diesel propulsion alone. The lack of priority accorded to surface ship production (correctly, for the submarine war was far more cost-effective) prevented these ships ever getting beyond the prototype stage.

The Japanese probably had the clearest ideas on what they wanted of their destroyers. Like those produced on both sides, their designs tended to be initially deficient in both AA and AS potential but, as ship-killers, they were excellent. From the 'Fubukis' of the late 1920s they standardized on the 127-mm (5-in) gun and the 610-mm (24-in) torpedo. Though stability ranges were sometimes inadequate, a whole series of derived classes were so armed without any essays into larger guns (probably because the average Japanese loader could not handle heavier rounds) while the 610-mm Type 93 or 'Long Lance' torpedo proved to be devastating, long-ranged, reliable and, unusually, complete with a full kit of reloads. Unlike the Italians, the Japanese operated best in groups, the quality of the ships being matched by that of their training. Up to the special-purpose 'Akitsukis' there had been great consistency of design, the main failing of which was that it adhered to pre-war standards, producing high-quality ships but in wholly inadequate numbers. Only with the 'Matsus' did the Japanese produce a utility series, too late to have any real impact.

An interesting design feature common to the majority of Axis destroyers of all three navies was a preference for twin-gun mountings and an avoidance of superimposed guns forward. A six-gun armament was thus achieved by superimposing the after mountings. Compared with British destroyers this allowed 50 per cent more barrels on a shorter axial length, at only small penalty in topweight and associated capsizing moment. A good armament facing aft was often an asset to a type of ship frequently pursued (and, if this sounds a mite defensive, there existed the British precedent of shipping aft-facing 152.4-mm/6-in guns on 101.6-mm/4-in armed light cruisers during World War I). Only with the Type II 'Hunts' did the British adopt the layout, HMS *Savage* being a further special case with a prototype twin 'Battle' class gunhouse forward and two single 114.3mm (4.5-in) guns aft.

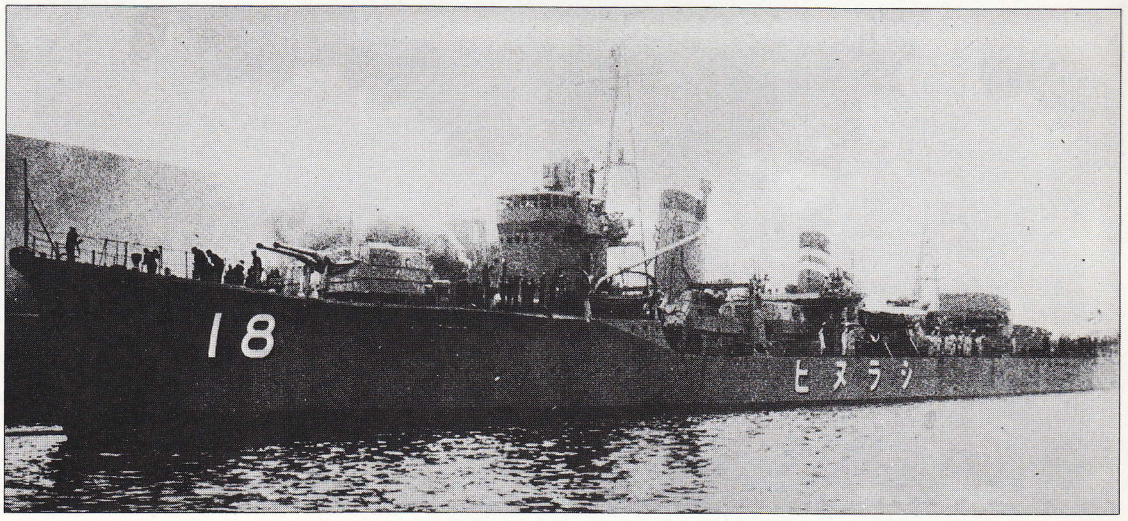
While, later in the war, all Axis destroyers had their AA armament enhanced in greater or lesser degrees, they proved equally poor AA platforms and just as vulnerable as Allied ships to air attack. Ultimately, in over five years of attritional war, the main failing of the Axis was its inability to replace its losses having failed to foresee the consequence of a prolonged conflict with traditional seapowers.

# 'Akatsuki' and 'Kagero' classes

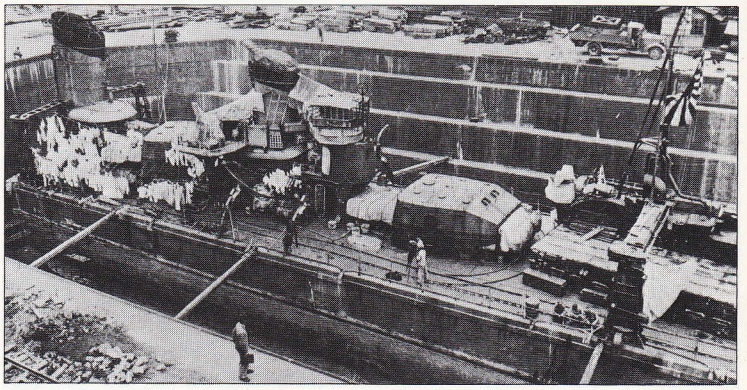
It is worthy of note that in the 'Fubukis' the Japanese had destroyers of a specification superior to that of the British J class, yet a full decade earlier. This sudden leap in capability was bound to bring problems, as succeeding classes demonstrated. The four **'Akatsuki' class** ships of 1931-3 kept the same arrangement on a slightly shorter hull but reduced the forward funnel to a thick pipe to save topweight, with lightweight masting and a reduction in depth charges. The *Hibiki* of this group was the first all-welded Japanese destroyer. In the six **'Hatsuhara' class** ships that followed, length was again cut, along with one 127-mm (5-in) gun and a set of torpedo tubes with reloads; installed power and speed were also reduced as designers wrestled with London Treaty restrictions. They were largely repeated with the 10 **'Shiratsuyu' class** ships, which again experienced a reduction in length, yet succeeded in increasing the torpedo armament to eight 610-mm (24-in) torpedoes with the usual set of reload weapons. The 10 **'Asashio' class** ships of 1937 were late enough to bypass lip service to treaties and returned to a size and armament almost identical with the 'Fubukis' of nearly a decade before. That this basic design was still relevant was underscored by recognizing it as the basis of the necessary expansion in destroyers on the lead-up to war. Thus 18 more destroyers, nearly identical, but proportionately beamier and known as the **'Kagero' class**, were put into the water between 1938 and 1941.

Their main characteristics were little different from those of the 'Fubukis', with superimposed twin gunhouses aft and one forward, the latter separated from the blockhouse of a bridge by a distinctive gap, which allowed very wide arcs. Both sets of torpedo tubes could be reloaded rapidly from low stowages flanking the forward funnel and in the after deckhouse. A 20-ship repeat class, the **'Yugumo' class**, followed in 1941-3.

The 'Kageros' themselves were heavily involved, only one ship surviving the war. The ***Natsushio*** was one of the very early losses when sunk by the veteran American submarine USS *S37* during the operation to take Makassar. Two more, the ***Arashi*** and ***Hagikaze***, were sunk by a total of five torpedo hits when the 'Tokyo Express' had the tables turned on it at Vella Lavella in August 1943. The other 'Kageros' were the ***Amatsukaze, Hamakaze, Hatsukaze, Hayashio, Isokaze, Kagero, Kuroshio, Maikaze, Nowake, Oyashio, Shiranuki, Tanikaze, Tokitsukaze, Urakaze*** and ***Yukikaze***.



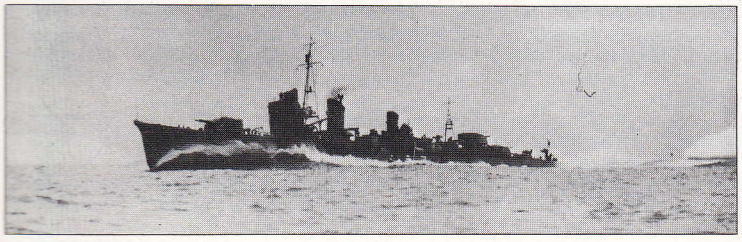

***Above:*** **Shiranuki** *leaves the Uraga shipyard in Tokyo after her commissioning ceremony in 1939. Very similar to the 'Asashio' class, the 'Kageros' were excellent fleet destroyers. One of their number, the* **Hamakaze,** *became the first Japanese destroyer to receive radar in 1943.*



***Right:*** **Shiranuki** *in less happier circumstances, berthed in Maizuru dock after narrowly surviving a torpedo hit from a US submarine off the Aleutians. The Japanese destroyer fleet was designed for surface action and had to be hastily modified for AA and ASW operations.*

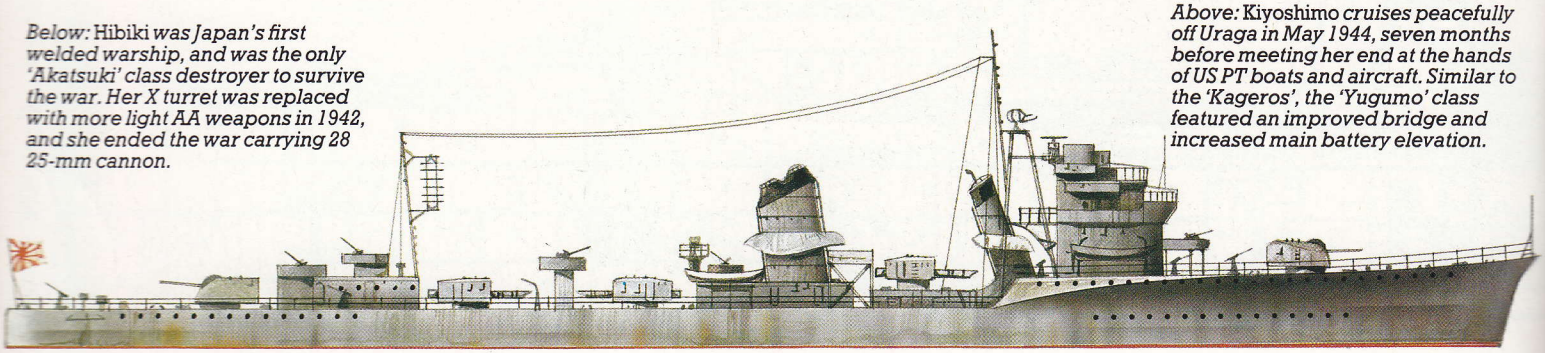
## Specification

**'Kagero' class** (as built)
**Displacement:** 2,035 tons standard and 2,490 tons full load
**Dimensions:** length 118.45 m (388.6 ft); beam 10.8 m (35.4 ft); draught 3.76 m (12.3 ft)
**Propulsion:** two sets of geared steam turbines delivering 38776 kW (52,000 shp) to two shafts
**Speed:** 35 kts
**Endurance:** 9250 km (5,748 miles) at 15 kts
**Armament:** three twin 127-mm (5-in) and two twin 25-mm AA guns, and two quadruple 610-mm (24-in) torpedo tube mountings
**Complement:** 240



***Above:*** **Arashi** *creates an impressive wake at nearly 35 kts. Just after midnight on 7 August 1943, she and three other destroyers were intercepted by six US destroyers while on a resupply mission, and in a furious action lasting just 30 minutes she and two of her companions were torpedoed and sunk.*

***Below:*** **Hibiki** *was Japan's first welded warship, and was the only 'Akatsuki' class destroyer to survive the war. Her X turret was replaced with more light AA weapons in 1942, and she ended the war carrying 28 25-mm cannon.*



***Above:*** **Kiyoshimo** *cruises peacefully off Uraga in May 1944, seven months before meeting her end at the hands of US PT boats and aircraft. Similar to the 'Kageros', the 'Yugumo' class featured an improved bridge and increased main battery elevation.*

# The Tokyo Express

***As the battle for the Solomon Islands developed the Japanese were faced with the problem of how to supply their troops in Guadalcanal in the face of US air supremacy; their solution was to use destroyers and fast transports which could get in and out under cover of darkness. These missions became so regular that they were dubbed 'The Tokyo Express'.***

May 1942 saw the Japanese consolidating their hold on the Solomons, from which they could threaten not only the New Hebrides and Fiji but also Australia itself. Encouraged by their great success of Midway, the Americans resolved that the Solomons would be the point at which the seemingly inexorable enemy tide would be stemmed. A battle of wills thus developed, with its centre on the strategically unimportant island of Guadalcanal, and the contest finally cost both sides dearly.

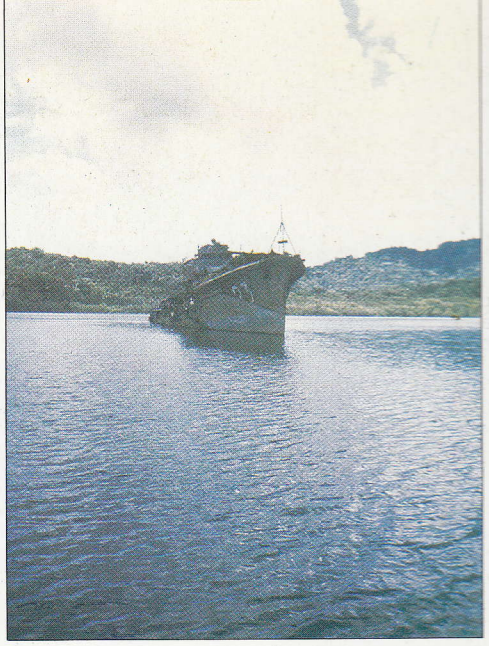
By early July the Americans were getting ready to mount their very first amphibious operation of the war, an operation urgently brought forward when aerial reconnaissance showed that the Japanese were preparing an airstrip on Guadalcanal and a seaplane base on neighbouring Tulagi. The landing, virtually unopposed, took place on 7 August and by 9 August apparently only mopping-up operations remained for the Americans.

Any complacency was rudely shattered on the night of 9 August when Vice-Admiral Gunichi Mikawa's cruisers bore in to inflict a bloody defeat off Savo Island on the naval forces covering the landing. This tactical defeat was, however, a strategic success for the enemy did not molest what should have been their prime target, the transports offshore. Even so, these felt obliged to withdraw for safety, leaving 16,000 US Marines unsupported ashore. Working feverishly in the damp, enervating heat, their engineers had the incomplete Japanese airstrip open for business by 15 August, and named it Henderson Field; it was to play a crucial role in the campaign. A trickle of supplies began to be flown in, reinforced by rapid trips from destroyer/transports.

On the night of 17/18 August nearly 1,000 Japanese troops were landed by high-speed transports escorted by seven fleet destroyers. Their speed was just sufficient to be in and out again within the hours of darkness, and their nocturnal activities were to become so regular as to be named the 'Tokyo Express'.

For a week the enemy ran in small parcels of troops to build up the strength to take the island, but even at this early stage they had to work by night as American air cover by day was too great a threat. In the early hours of 22 August the destroyer USS *Blue* (one of the pickets so ineffective a fortnight previously at Savo) was one of two radar-equipped ships sent to interdict the Japanese. Again they were surprised and the ship was heavily damaged by torpedoes from the *Kawakaze*. She was later scuttled and the enemy had claimed first blood.

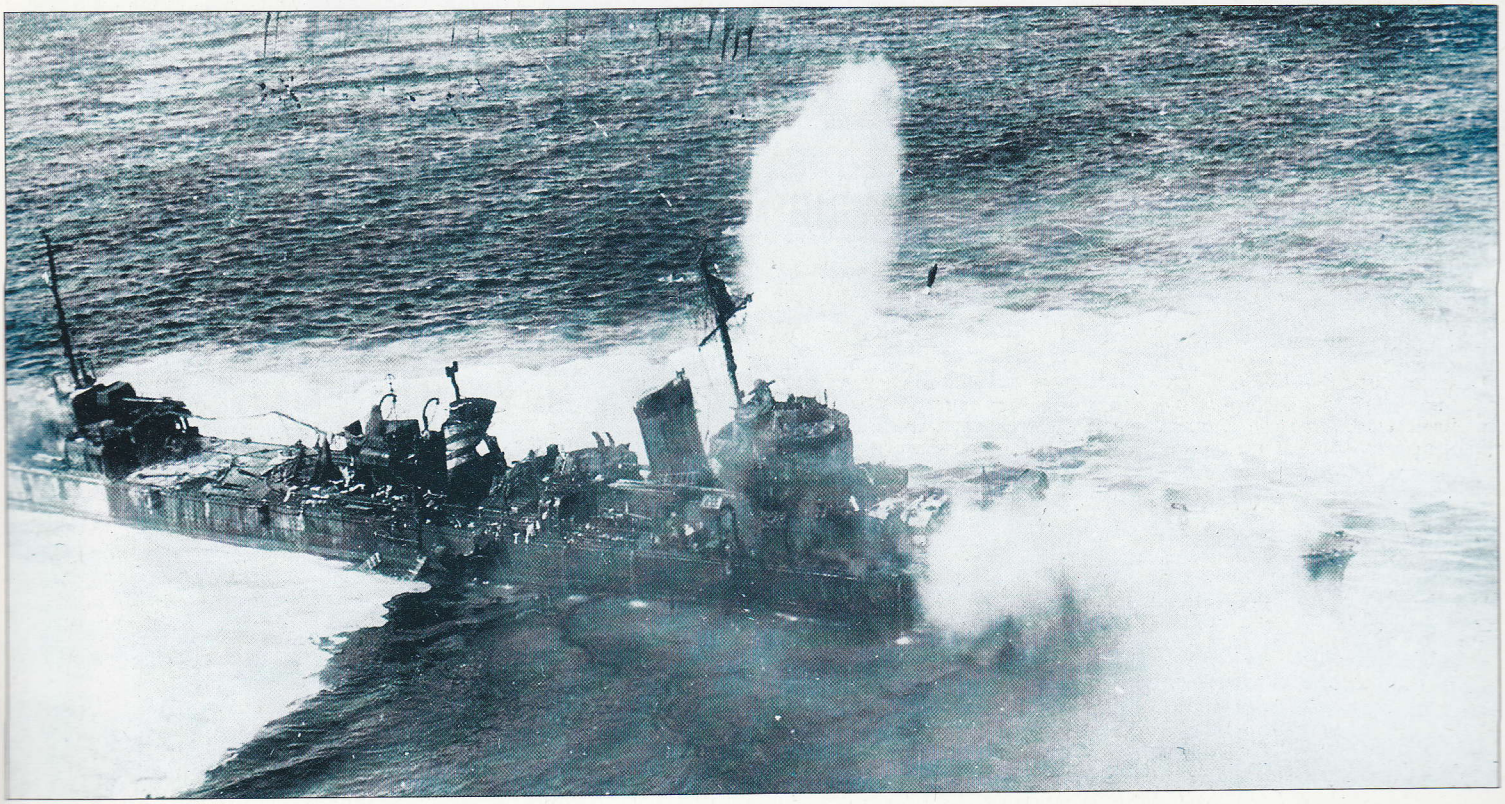
On 24 August the enemy tried direct assault. While the inconclusive Battle of the Eastern Solomons was being fought between the main fleets to engage the American presence, a bombardment force of four destroyers under the redoubtable Rear-Admiral Raizo Tanaka ran a group of transports down 'The Slot', the long channel dividing the double chain of the Solomons. The destroyers duly 'softened up' Henderson Field but had a transport set afire and the destroyer *Mutsuki* disabled because she dallied too long and was caught by daylight. The landing was called off and the *Mutsuki* scuttled.



*A Japanese destroyer lies off Florida island, the northern perimeter of 'Ironbottom' Sound. In the almost nightly engagements off Guadalcanal, the Japanese demonstrated a mastery of flotilla tactics which proved very difficult for the Americans to overcome.*

By working out of the Shortlands, Tanaka was just beyond the range of the Henderson-based Douglas SBD bombers yet just able to complete a smart return trip in the dark hours. Thus three destroyers landed 350 men on the night of 26/27 August and 130 more on the following night. Overconfident, the Japanese then left too early on the next trip and were caught at dusk, losing the *Asagiri*, her embarked troops and their supplies.

*US air superiority after Midway forced the Japanese to resupply their island garrisons under cover of darkness, often using destroyers converted to a transport role, such as this 'Mutsuki' class vessel seen here caught at dawn still within range of US aircraft from Guadalcanal.*



It became the custom for the enemy destroyers, once their supercargo had been rapidly offloaded, to spend a few minutes lobbing a valedictory salvo or two into the airfield perimeter. On 5/6 September the American destroyer/transports USS *Gregory* and USS *Little* tried to interfere and were both sunk.

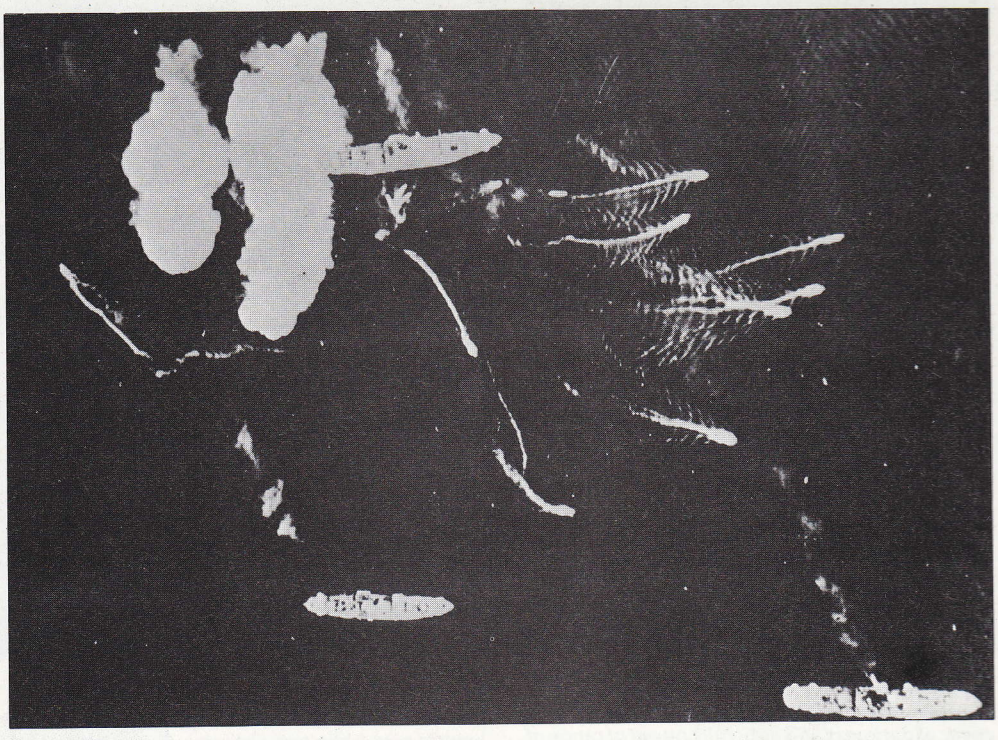
## Guadalcanal

By mid-September the situation ashore was stalemated, neither side having the strength to displace the other. The Japanese high command then made Guadalcanal a top-priority goal, withdrawing the all-important destroyers in rotation for modification. Stowage and AA weapons were increased for the loss of some main battery guns. Torpedoes were retained.

Supplemented by pottering Daihatsu barges, the destroyers built up the Japanese strength for an offensive. With the Americans in greater strength than anticipated, this was defeated, the destroyers having to run urgently needed replacements. Meanwhile, the Americans landed 4,000 more marines, but at the cost of the carrier USS *Wasp* and a destroyer from the covering force.

During October Tanaka's destroyers worked miracles, the nightly runs of the 'Tokyo Express' delivering 20,000 men with equipment. Henderson-based aircraft were a continuing aggravation and heavy cruisers came down on the night of 11/12 October to bombard the airfield. They ran straight into a superior American force that had been covering one of their own landings. In what became called the Battle of Cape Esperance the unsuspecting Japanese had their 'T' crossed and lost a cruiser and a destroyer. Two destroyers from the 'Express' were also sunk by aircraft at first light.

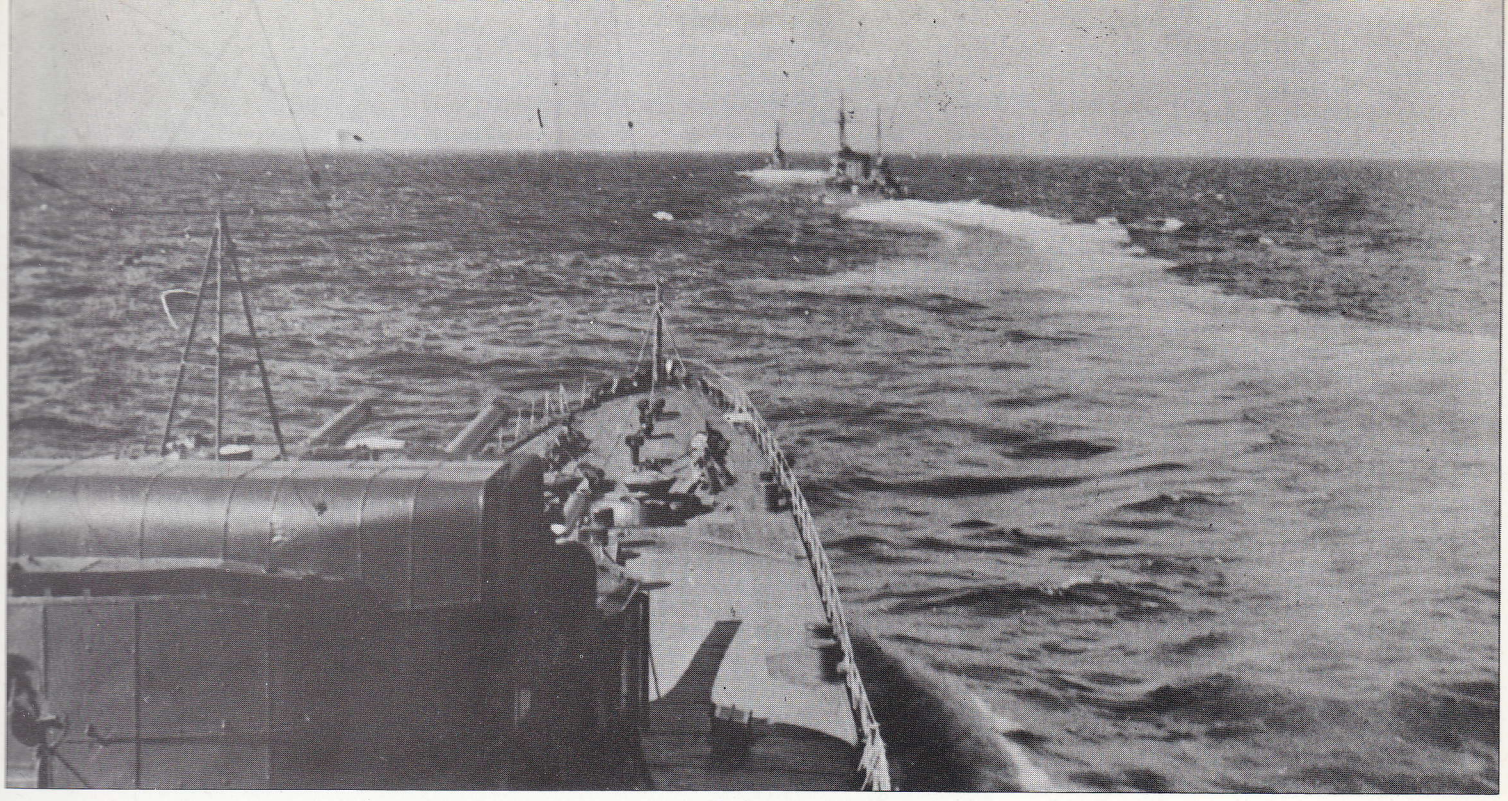
Determined to reduce Henderson, the Japanese bombed it heavily twice in daylight on 13 October, interfered with repairs to cratered airstrips by artillery fire and then, after dark, brought down two battle-cruisers. In a 90-minute bombardment the airfield was plastered with over 900 rounds of 356-mm (14-in) ammunition. Aviation spirit stocks and 48 aircraft were lost. More bombing on the following day was followed by 750 rounds of 203-mm (8-in) fire during the night from two heavy cruisers. Simultaneously, the 'Express' brought in heavy reinforcements in transports, gambling on the parlous state of Henderson's defenders to lie offshore during the day. Fielding everything that remained, the Americans destroyed three transports and forced Tanaka to withdraw. He returned with heavy cruisers on the night of 15/16 October, laying 900 rounds of 203-mm and 300 of 127-mm (5-in) fire within the shattered perimeter.



*A Japanese troop transport off Guadalcanal receives attention from a Boeing B-17. Unusually, the bombers have hit their target and landing barges scurry away from the stricken vessel.*

Dazed and battleweary, the defenders then had to beat back the Japanese who, from 22 to 26 October, committed everything to what was intended as a final assault. They failed by a narrow margin and Tanaka's destroyers were given a very damaging reception from artillery when they unwisely assumed from the lack of Henderson cover that it was safe to support the army by day.

*In the early hours of 14 November 1943 the Japanese beached a number of transports on Guadalcanal while a mixed cruiser and destroyer force plastered Henderson Field with shell fire. The next night the US Navy was ready for them and battleships* South Dakota *and* Washington *intercepted the Japanese just before midnight. USS* Washington *took only 7 minutes to pulverize the Japanese battleship* Kirishima *with rapid salvoes from her 16-in guns. The Japanese abandoned their bombardments thereafter, and Tanaka's destroyers were left to manage as best they could.*



*A flotilla of Japanese destroyers cruise towards Guadalcanal, which they will resupply under cover of darkness and hopefully be out of range of US aircraft by dawn. Setting out too early was as great a danger as being caught out in the morning, as Asagiri discovered to her cost.*

Impatient for a decision, the Japanese brought their main fleet south and engaged the new American commander, Vice-Admiral William F. Halsey, off Santa Cruz on 26 October. Though suffering a prohibitively expensive toll in aircraft and pilots, the Japanese succeeded in adding the carrier USS *Hornet* to the cost of Guadalcanal.

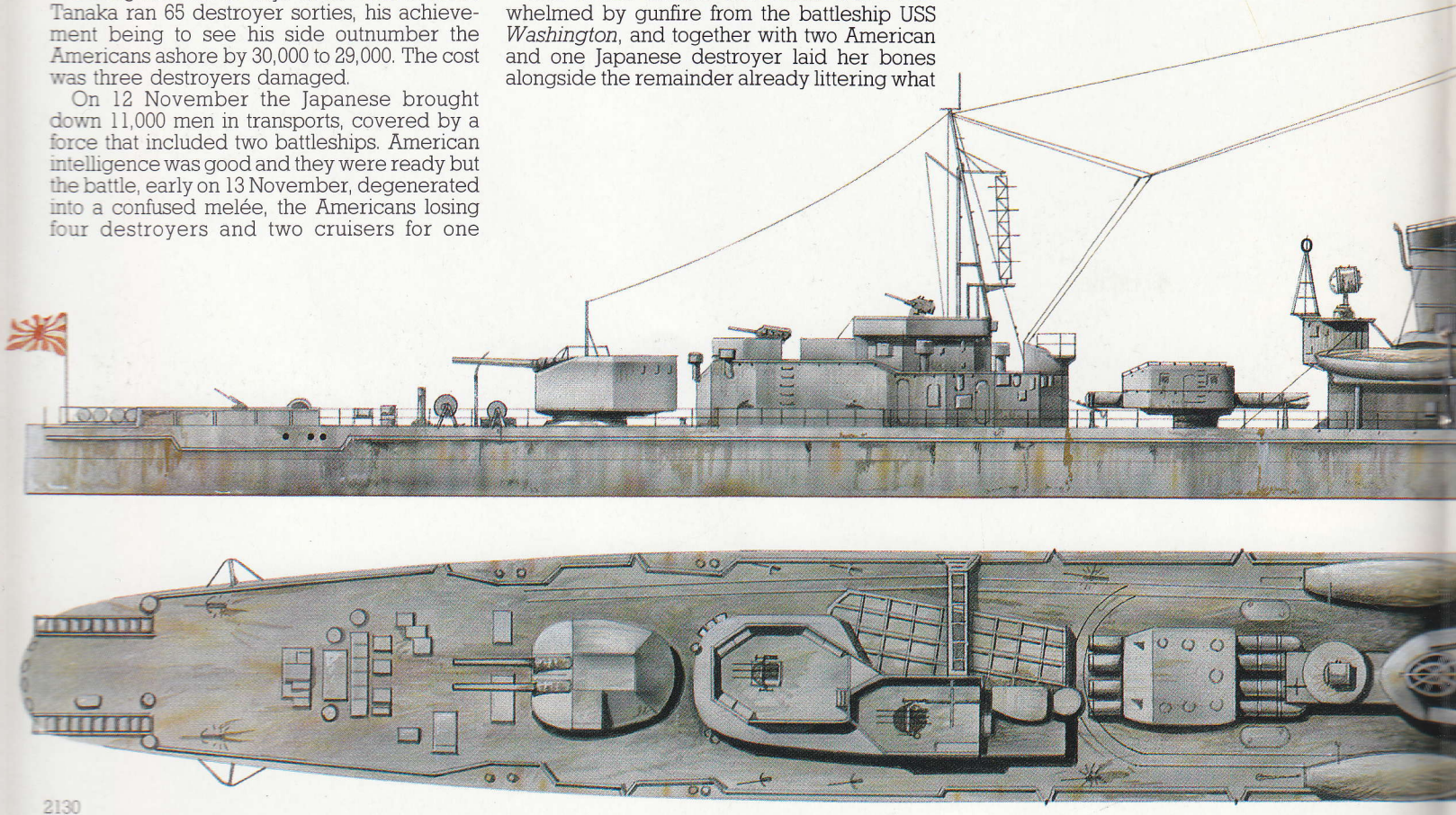
During the first 10 days of November alone Tanaka ran 65 destroyer sorties, his achievement being to see his side outnumber the Americans ashore by 30,000 to 29,000. The cost was three destroyers damaged.

On 12 November the Japanese brought down 11,000 men in transports, covered by a force that included two battleships. American intelligence was good and they were ready but the battle, early on 13 November, degenerated into a confused melée, the Americans losing four destroyers and two cruisers for one Japanese battleship and two destroyers. Undeterred, the Japanese returned during the following night, the airfield again being swept by 1,400 assorted cruiser and destroyer rounds in the space of 37 minutes. With daylight Henderson-based aircraft caught the culprits, sinking a heavy cruiser, but they had diverted attention from the 'Express', which had run in no less than 10 transports. Six were lost to frantic air attack and the remainder beached to guarantee their deliveries. The enemy certainly did not lack resolve. A heavy covering force also came down 'The Slot' and was met by a similar American force near Savo Island.

The battle-cruiser *Kirishima* was overwhelmed by gunfire from the battleship USS *Washington*, and together with two American and one Japanese destroyer laid her bones alongside the remainder already littering what was now known as Ironbottom Sound.

The cost had resulted in only 2,000 of 7,000 Japanese troops actually being landed. The Americans now outnumbered their foe by 40,000 to 25,000 and only Tanaka could prevent disaster. His overworked destroyers were re-

***The Yukikaze as she appeared in 1945. Her X turret was removed in 1944 in favour of more light AA guns. Thus augmented, her AA armament consisted of 24 25-mm and four 13-mm weapons. Her main armament remained two four-tube mountings for the 610-mm (24-in) 'Long Lance' torpedoes, four 127-mm (5-in) guns, and 16 depth charges.***



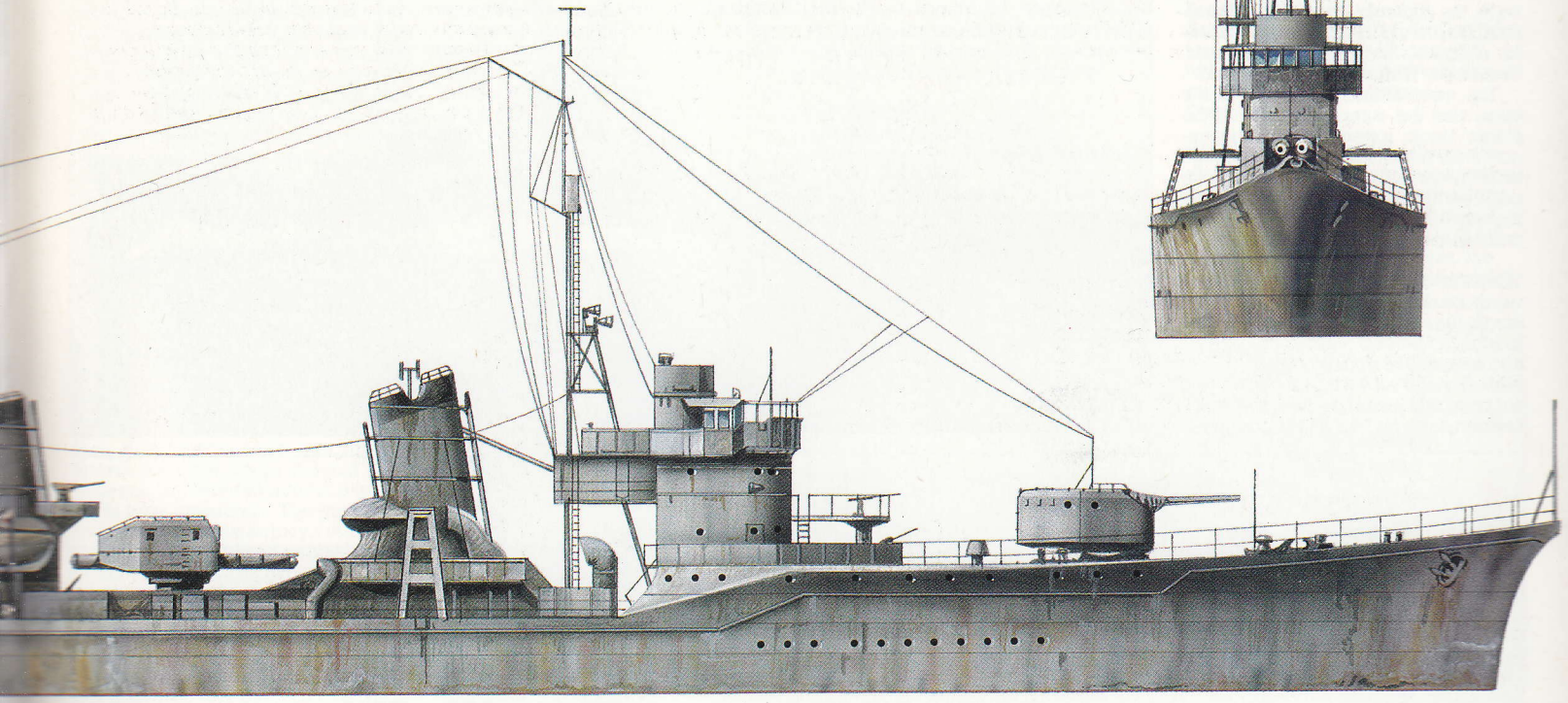
*In early February 1943 the Japanese resolved to abandon Guadalcanal and Tanaka's destroyers returned again, this time to evacuate the troops they had supplied so diligently. US forces did little to interfere with a well-disguised withdrawal, and by 7 February all that remained of the Japanese presence was wreckage, like this rusting transport.*

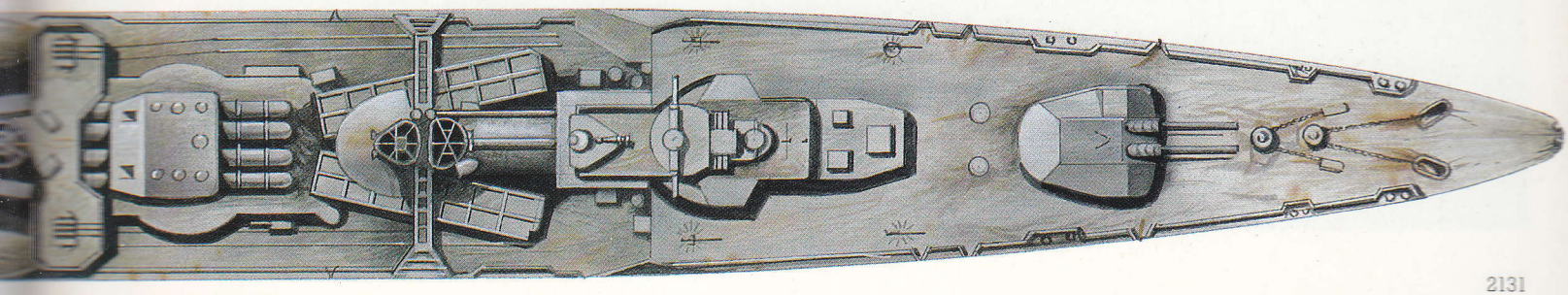
duced to delivering supplies by rubberized containers, pushed overboard.

During the night of 30 November eight of his destroyers, cluttered with supplies and personnel, were surprised by an American force of five cruisers and six destroyers off Tassafaronga. The seasoned Japanese reacted instinctively and freely with torpedoes, while the less-experienced Americans betrayed their positions by reliance on radar-laid gunfire. Four cruisers were torpedoed, one was lost. Tanaka lost one destroyer but had turned a potential defeat into victory and still delivered the goods.

Early December saw a spate of runs by up to 10 destroyers at a time, that on 12 December losing the destroyer *Teruzuki* to a PT boat's torpedoes. Mechanically unsound and bereft of air cover, the Japanese called a halt until the next moonless phase in early January 1943. By now the Japanese high command had resolved on Guadalcanal being evacuated as untakable and, on 14 January 1943 Tanaka ran in 600 crack troops to act as rearguard. The evacuation itself was, unbelievably, not opposed. In three operations between 2 and 7 February, Tanaka used a cruiser and 20 destroyers to remove every last soldier: the Americans either did not appreciate the position or were just relieved to see the back of the Japanese, the only loss being a mined destroyer.

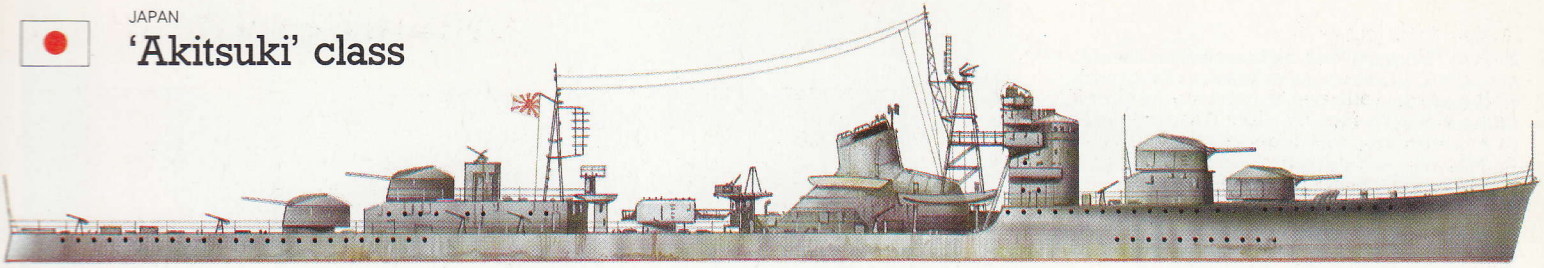
The island had cost the Americans about 1,600 troops, and many more sailors; the enemy had lost over 23,000. Both sides had lost 24 ships apiece of destroyer size and above in numerous skirmishes and seven major actions. The Japanese fleet, experienced but outnumbered, acquitted itself admirably; while the Americans, starting as 'rookies', stuck to their task, eventually emerging not only victorious but much the wiser.





JAPAN

# 'Akitsuki' class



By far the largest destroyers built in series by the Japanese, the **'Akitsuki' class** ships were conceived originally as AA escorts comparable with the British 'Dido' and US 'Atlanta' cruiser classes and, by comparison, offered a cheaper solution to the problem. The choice of a 100-mm (3.94-in) gun was probably better than that of the 133.4-mm (5.25-in) and 127-mm (5-in) weapons of the Western ships, whose rate of fire was considerably lower, though the lively hull of a destroyer must have made them less effective than cruisers when firing at aircraft. They were the only eight-gun destroyers in the Japanese fleet, and it would seem that the quadruple torpedo tube mounting was something of a late addition. Though they had the basis of an effective design, the Japanese too had underestimated the devastating effect of a determined air attack and only four light automatic guns of the standard 25-mm calibre were originally shipped. War experience encouraged the addition of more at virtually any opportunity, so that, by the end of the war, those still afloat (six were sunk) could dispose of up to 50 such weapons. Launched between 1941 and 1944, the ships of the class were the ***Akitsuki, Fuyutsuki, Hanatsuki, Harutsuki, Hatsutsuki, Natsusuki, Niitsuki, Shimotsuki, Suzutsuki, Terutsuki, Wakatsuki*** and ***Yoitsuki***.

The most distinctive feature of the class was the complex casing of the single stack; extensive trunking enabled the funnel to be sited far enough abaft the bridge both to cut the smoke problem and greatly improve visibility, while placing it sufficiently far forward to permit extra AA platforms to be installed where the after stack would normally have been.

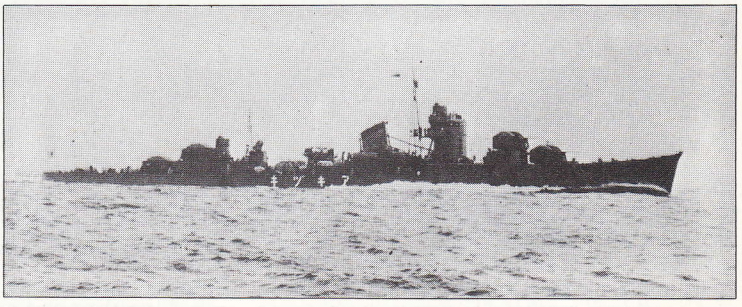
A feature of preceding classes had been their extremely light masts, but the 'Akitsukis' were among the first to have their masts strengthened for the support of the considerable bulk of the Type 22 surveillance radar antenna. The size of the hull, combined with a comparatively light gun armament and few torpedoes, allowed more generous topweight margins than was customary with Japanese destroyers, one result being a large depth-charge capacity. Nearly 40 more hulls to two improved designs were planned but never completed.

***'Akitsuki' class destroyers could easily be distinguished by their single funnel. Sited well abaft the bridge, it allowed greater visibility and less smoke difficulty while allowing more AA weapons to be shipped in the space where their contemporaries had a second stack.***

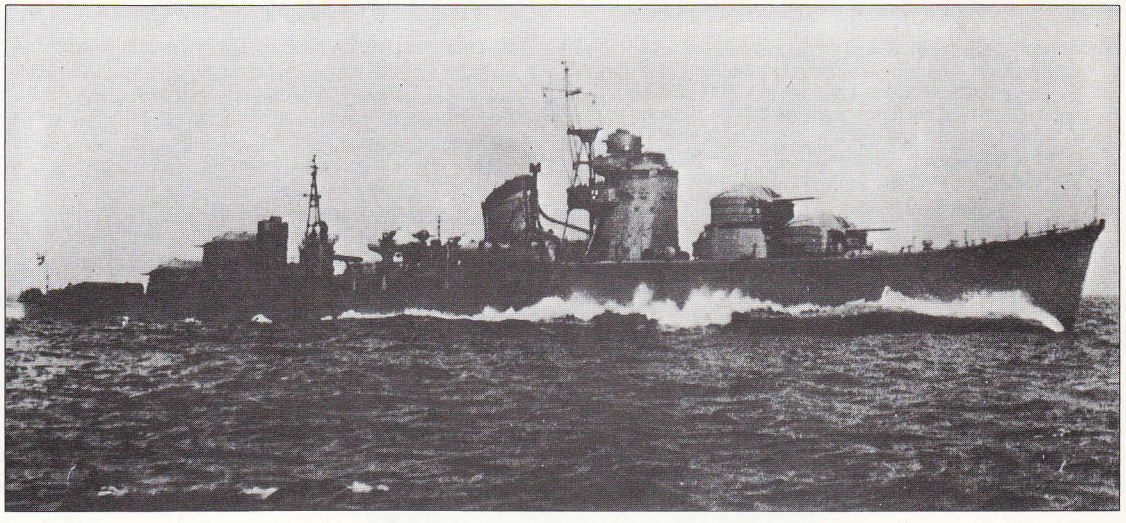
## Specification

**'Akitsuki' class** (as built)
**Displacement:** 2,700 tons standard and 3,700 tons full load
**Dimensions:** length 134.12 m (440.0 ft); beam 11.6 m (38.1 ft); draught 4.11 m (13.5 ft)
**Propulsion:** two sets of geared steam turbines delivering 38776 kW (52,000 shp) to two shafts
**Speed:** 33 kts
**Endurance:** 14825 km (9,212 miles) at 18 kts
**Armament:** four twin 100-mm (3.94-in) and two twin 25-mm AA guns, and one quadruple 610-mm (24-in) torpedo tube mounting
**Complement:** 285

***Above: 'Akitsuki' class destroyers were built as fast AA escorts to operate with the carrier groups, the choice of eight 100-mm (3.94-in) guns being more appropriate to the task than the bigger weapons fitted to US or Royal Navy AA vessels.***



***Carrying only a light gun armament and four torpedo tubes, the 'Akitsukis' could accommodate a substantial depth-charge capacity. Their large hulls soon bristled with light AA weapons, 40 to 50 25-mm guns being fitted to the units that were still operational in 1945.***

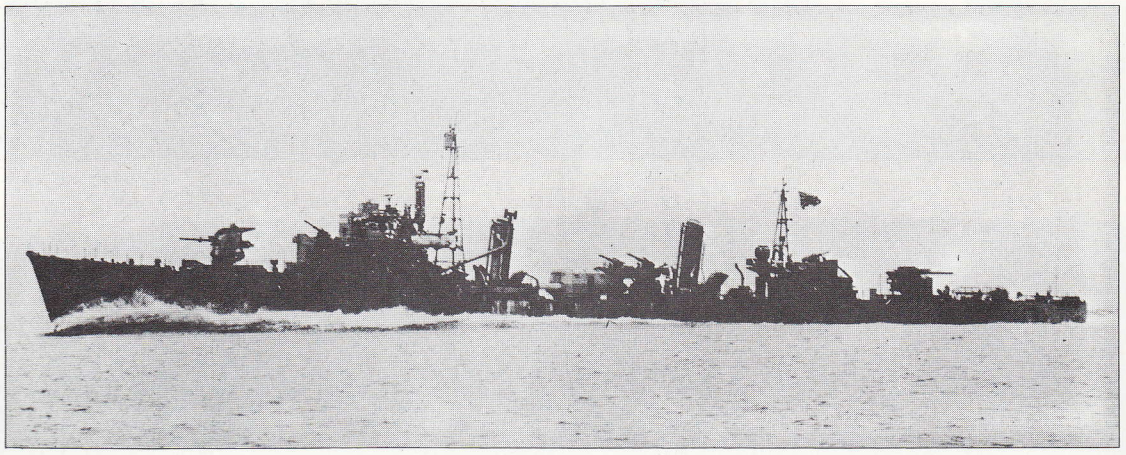


JAPAN

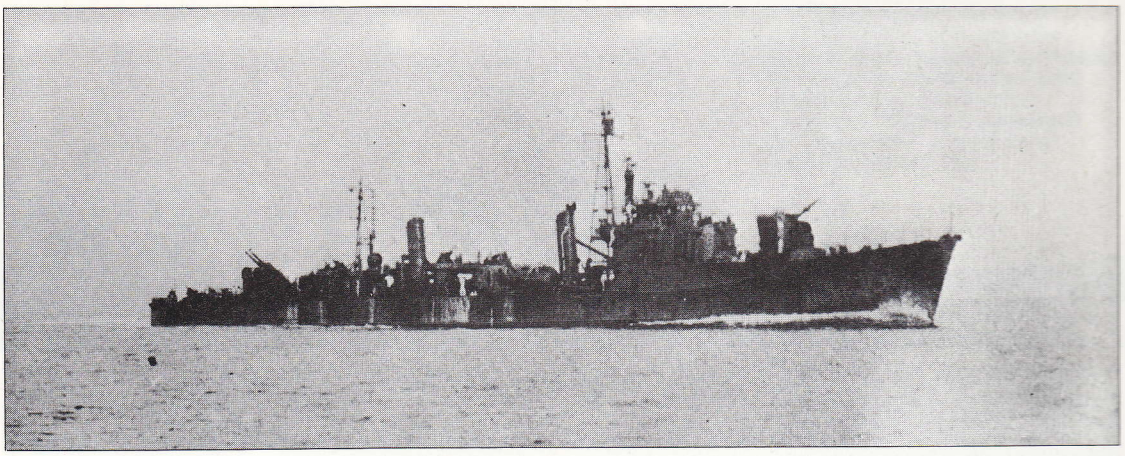
# 'Matsu' class

Japan's commitment to a short war was nowhere more evident than in her lack of plans for rapid fleet expansion. Convoy escorts were virtually non-existent (as, indeed, were plans for the convoy system itself) and pre-war fleet destroyers, that were being lost and disabled at an alarming rate, were being replaced by ships of equal quality. Though the notion was laudable, there simply was neither the time nor the capacity to produce such ships, and a

***Japanese destroyer losses rapidly outpaced shipyard production, and in common with her enemies Japan resorted to the construction of a utility class of escort destroyer. Nevertheless, the 'Matsu' class were better armed and more comfortable vessels than their Allied equivalents.***



utility design had rapidly to be developed. In profile this, the **'Matsu' class**, looked large by virtue of the two spindly and widely spaced funnels, but it was the smallest both in terms of size and displacement to be built since World War I. The correct scale was given by the gun mountings, which appeared overlarge. These were simple in the extreme, a single handworked 127-mm (5-in) weapon in a shield forward and a twin in a open structure aft. Installed power was little more than one-third that of the fleet destroyers, but the 'Matsus' could still manage about 28 kts, more than adequate for convoy work. A respectable two dozen 25-mm automatic AA weaons were carried, though many of these were single-barrelled mountings, sited in very exposed positions along the edges of the hull. Right amidships was a quadruple 610-mm (24-in) torpedo tube bank; a new-pattern sextuple unit had been planned but not completed. In a ship of this capacity and speed the tubes were mainly of defensive value but still had the splinter-proof house from which this important weapon could be worked in some comfort. This, and the enclosed bridge, contrasted with the spartan appointments on British ships where, at the time, it seemed little appreciated that a comfortable crew actually performed better, without the tendency to 'go soft'.



Only 17 of the planned 28 'Matsus' were so completed in 1944-5, by which time the design had been even further simplified into the **'Tachibana' class** variant, of which 23 were laid down but many were not completed. Ninety further units never proceeded beyond the planning stage. By virtue of their being completed late in the war and engaged on second-line duties, an unusual number survived, losses amounting to 11.

## Specification

**'Matsu' class**
**Displacement:** 1,260 tons standard and 1,530 tons full load
**Dimensions:** length 100.0 m (328.1 ft); beam 9.35 m (30.7 ft); draught 3.27 m (10.7 ft)
**Propulsion:** two sets of geared steam turbines delivering 14168 kW (19,000 shp) to two shafts
**Speed:** 27.5 kts
**Endurance:** 8350 km (5,188 miles) at 16 kts
**Armament:** one twin and one single 127-mm (5-in) plus four triple and 12 single 25-mm AA guns, and one quadruple 610-mm (24-in) torpedo tube mounting
**Complement:** not known

***Designed for rapid production, the 'Matsu' class's turbines provided only about a third of the power of a fleet destroyer's machinery, but they were capable of a respectable 28 kts. The 'Matsu' class had their two sets of machinery arranged in separate units for better damage control.***

ITALY

# 'Generale' class

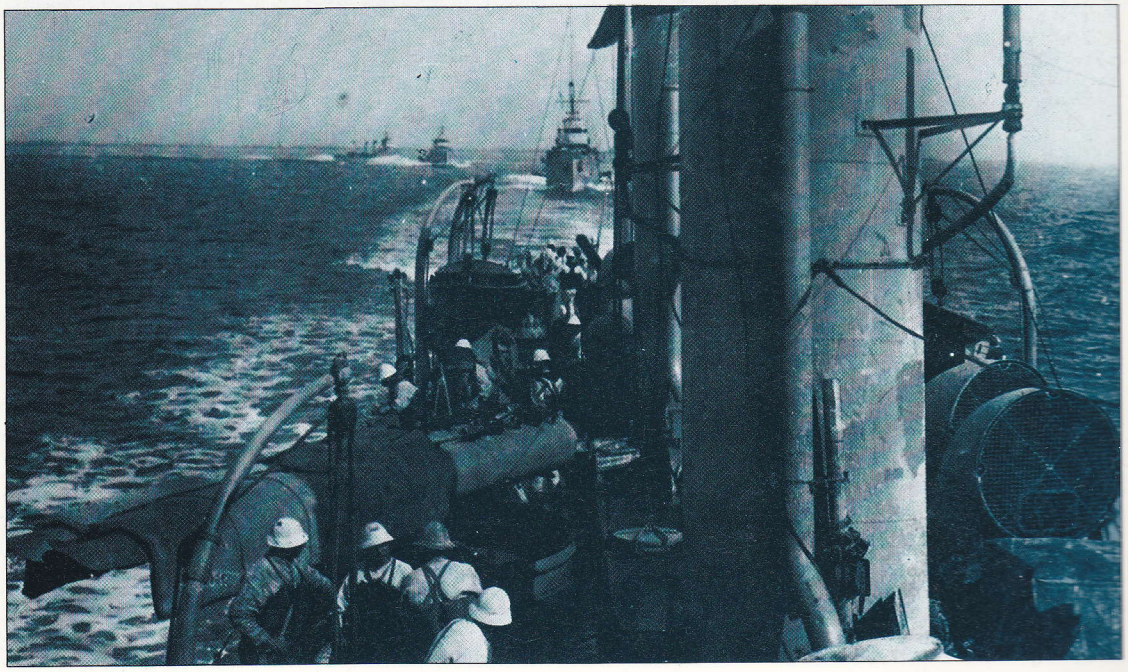
Like the Germans, the Italians operated a large force of light destroyers alongside their main fleet units. Both navies referred to these as torpedo boats, a term which sometimes confuses the British reader, who may think of them in terms of MTBs. The nearest thing to such ships in the Royal Navy were the 'Hunt' classes which were more robust but slower; equivalent to the older enemy boats were the few Admiralty 'S' class units still serving.

The six **'Generale' class** ships were the last of four very similar 73-m (239.5-ft) classes which commenced with the eight-strong **'Pilo' class** of 1914-5. These were narrow-gutted three-stackers, typical destroyers of their time, which were downgraded to torpedo boat status between the wars as larger ships commissioned. For their size they were quite ambitiously armed, with five single 102-mm (4-in) guns and two twin 440-mm (17.3-in) torpedo tube mountings. The gun layout was hardly satisfactory, with one mounting on the raised forecastle, two sided amidships and two on the quarterdeck, no more than three being effective on either beam. The four **'Sirtori' class** ships squeezed in an extra gun on an already tight topweight reserve. These dated from 1916-7 and were followed by the eight **'La Masa' class** ships of 1917-9, which had their armament reduced to only four guns. In 1919-20 came four **'Palestro' class** ships, slightly larger at 82 m (269 ft) to accommodate a near 50 per cent increase in power. Though these were to have a follow-on in the **'Curtatone' class** of 1922-3, these two groups were separated by one last 73-m (239.5-ft) class, the 'Generali', all six of which were launched in 1921-2 by the single yard of Odero, at Sestri Ponente. The ships were the ***Generale Antonio Cantore, Generale Antonio Cascino, Generale Antonio Chinotto, Generale Carlo Montanari, Generale Achille Papa*** and ***Generale Marcello Prestinari***. Of similar size to the earlier ships, they carried only three guns, a complement to which most were eventually reduced by wartime demands. None of these small and elderly ships was employed in front-line operations, but all nevertheless became war casualties. Three were mined, one of them the *Chinotto*, sinking in a field laid by the British submarine HMS *Rorqual* during a particularly fruitful patrol. These mines, off western Sicily, also claimed two merchantmen, while the submarine also sank another and an Italian submarine by torpedo

## Specification

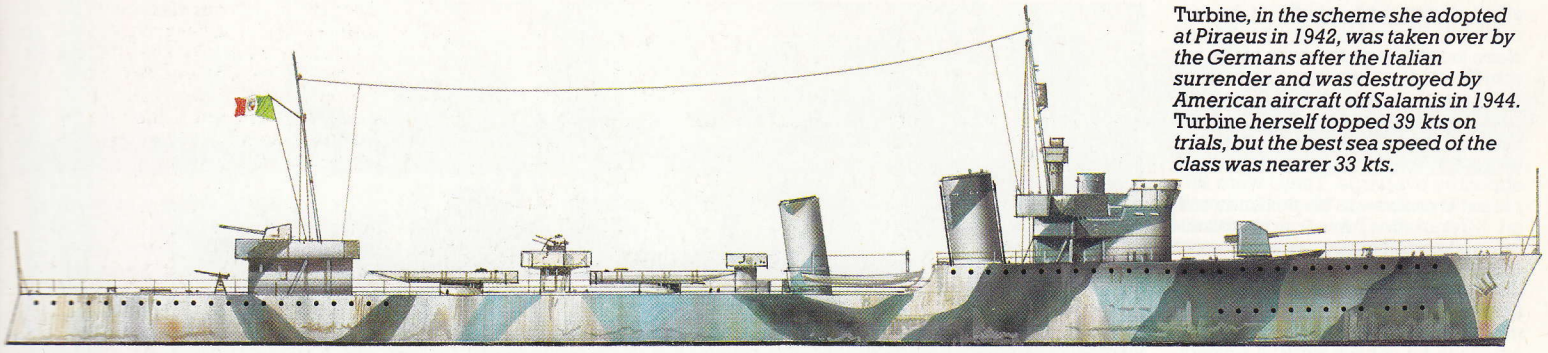
**'Generale' class** (as built)
**Displacement:** 635 tons standard and 890 tons full load
**Dimensions:** length 73.5 m (241.1 ft); beam 7.33 m (24.0 ft); draught 2.5 m (8.2 ft)
**Propulsion:** two sets of steam turbines delivering 11186 kW (15,000 shp) to two shafts
**Speed:** 30 kts
**Armament:** three single 102-mm (4-in) and two 76-mm (3-in) AA guns, two twin 450-mm (17.72-in) torpedo tube mountings and up to 18 mines
**Complement:** 105

***The Italian navy, like the German navy, classified its light destroyers as 'torpedo boats'. Eight-hundred-ton vessels mounting three 102-mm (4-in) guns, a pair of 450-mm (17.7-in) torpedoes and up to 18 mines, the versatile 'Generale' class were built in the early 1920s.***



ITALY

# 'Turbine' class



*Turbine, in the scheme she adopted at Piraeus in 1942, was taken over by the Germans after the Italian surrender and was destroyed by American aircraft off Salamis in 1944. Turbine herself topped 39 kts on trials, but the best sea speed of the class was nearer 33 kts.*

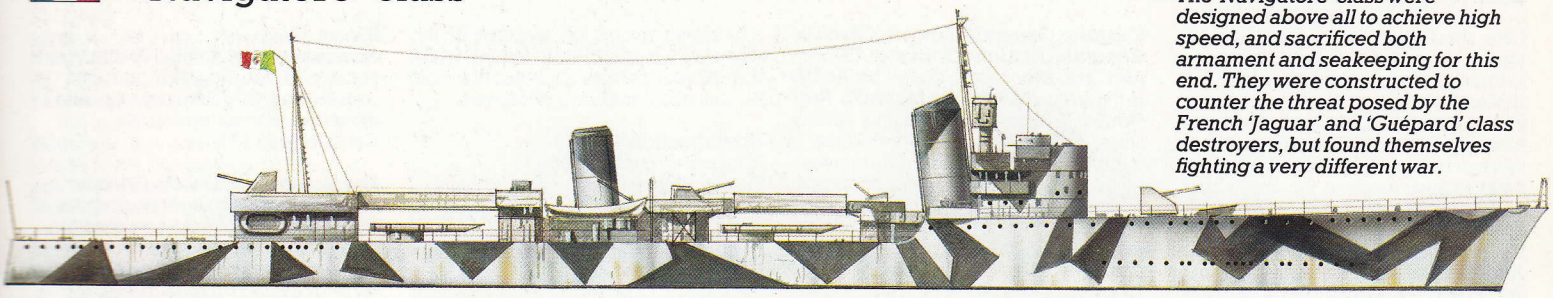
Dating from 1927-8, the eight **'Turbine' class** destroyers (***Aquilone, Borea, Espero, Euro, Nembo, Ostro, Turbine*** and ***Zeffiro***) were nearly identical with the quartet of **'Sauro' class** units that immediately preceded them, the major difference being an extra 3 m (9.84 ft) or so in length to accommodate an approximate 11 per cent increase in power. A feature of both types was the massive armoured 'pillbox' of a conning tower that topped-off the enclosed bridge. They were the last Italian destroyers to have the low velocity 45-calibre 120-mm (4.72-in) guns, all those following having a 50-calibre weapon. They were, however, the first to mount a second director for the after guns; this was sited between the torpedo tube groups but was probably set too low to be of very much use.

The four 'Sauro' class ships were destroyed as part of the hopelessly isolated Red Sea squadron, while no less than six of the 'Turbine' class were sunk in 1940. Each of the class, in common with most Italian destroyers, could carry over 50 mines, and four of them thoroughly mined the waters off Tobruk. The Axis garrison there was to prove as much a problem to support as later it did for the British, and the *Espero* became the first casualty as early as 28 June 1940 when caught by the Australian cruiser HMAS *Sydney*, the ship that went on to sink the cruiser *Bartolomeo Colleoni* off Cape Spada only three weeks later. 'Stringbags' from the carrier HMS *Eagle* disposed of the *Zeffiro* and a freighter, and heavily damaged the *Euro* in Tobruk harbour during early July, repeating the exercise barely a fortnight later when they sank the *Ostro* and *Nembo* together with a freighter in the adjacent Gulf of Bomba. It was these same aircraft, working from a shore base near Port Sudan, that were to sink two of the 'Sauros' in the Red Sea in the following April. Carrier-based air attack accounted for another pair on the night of 16/17 September when HMS *Illustrious* blitzed Benghazi. The *Euro* was sunk by German bombers after the Italian capitulation, while the *Turbine* herself, captured by the Germans, was finally sunk by American aircraft in September 1944.

## Specification
**'Turbine' class**
**Displacement:** 1,090 tons standard and 1,700 tons full load
**Dimensions:** length 92.65 m (304.0 ft); beam 9.2 m (30.2 ft); draught 2.9 m (9.5 ft)
**Propulsion:** two sets of geared steam turbines delivering 29828 kW (40,000 shp)
**Speed:** 36 kts
**Armament:** two twin 120-mm (4.72-in) and two single 40-mm AA guns, two triple 533-mm (21-in) torpedo tube mountings and up to 52 mines
**Complement:** 180

ITALY

# 'Navigatore' class



*The 'Navigatore' class were designed above all to achieve high speed, and sacrificed both armament and seakeeping for this end. They were constructed to counter the threat posed by the French 'Jaguar' and 'Guépard' class destroyers, but found themselves fighting a very different war.*

Some four years after the completion of the 'Leone' class scouts, the Italians produced between 1928 and 1930 (launch dates) another oversized class in the 12 **'Navigatore' class** destroyers, namely the ***Alvise da Mosto, Antonio da Noli, Antonio Pigafetta, Antoniotto Usodimare, Emanuelle Pessagno, Giovanni da Verazzano, Lanzerotto Malocello, Leone Pancaldo, Luca Tarigo, Nicoloso da Recco, Nicolo Zeno*** and ***Ugolino Vivaldi***. They were, in fact, of slightly smaller dimensions but of greater displacement. Much of this was accounted for by machinery producing a maximum of nearly 44742 kW (60,000 shp) and a third twin 120-mm (4.72-in) gun mounting between the two groups of torpedo tubes. Though large for their day, the gradually increasing scale of destroyers in general meant that the ships' size and displacement was equalled by those of the second group of 'Soldati' a decade later. The 'Navigatori' were produced at a time when high speed was an obsession with the Italians. Parallel with their construction was that of the first group of 'Condottiere' class cruisers; often running without armament and stores, these were forced to the point where they produced trial speeds of better than 42 kts. Only the 'Navigatori' were large enough to have a hope of matching such performance in a seaway and to prove this possible, at least theoretically, their machinery was overrun briefly on trials to return better than 44 kts. They were extremely lightly built and their seakeeping left something to be desired, though it was improved later by increasing their freeboard. Another futile gesture toward weight-saving was the original provision of torpedo tubes of only 440-mm (17.3-in) calibre.

Their fates were a reflection of the confusion of loyalties suffered by the Italians during the war. Eleven of the 12 were sunk: six of these losses were from direct action by the British and another by mine; two were sunk in action with the Germans; one was scuttled; and the last was sunk in error by an Italian submarine. The *Pancaldo* was an early loss, sunk by aircraft from HMS *Eagle* outside Augusta after returning from the Battle of Calabria. She was later salvaged and recommissioned, only to be sunk again (and finally) by aircraft off Cape Bon in April 1943 while running supplies to the remnants of the army in North Africa. Another, the *Pigafetta*, was also sunk twice, being scuttled at Fiume at the Italian surrender, but refloated and put back into service by the Germans, only to be destroyed by British air attack on Trieste in February 1945.

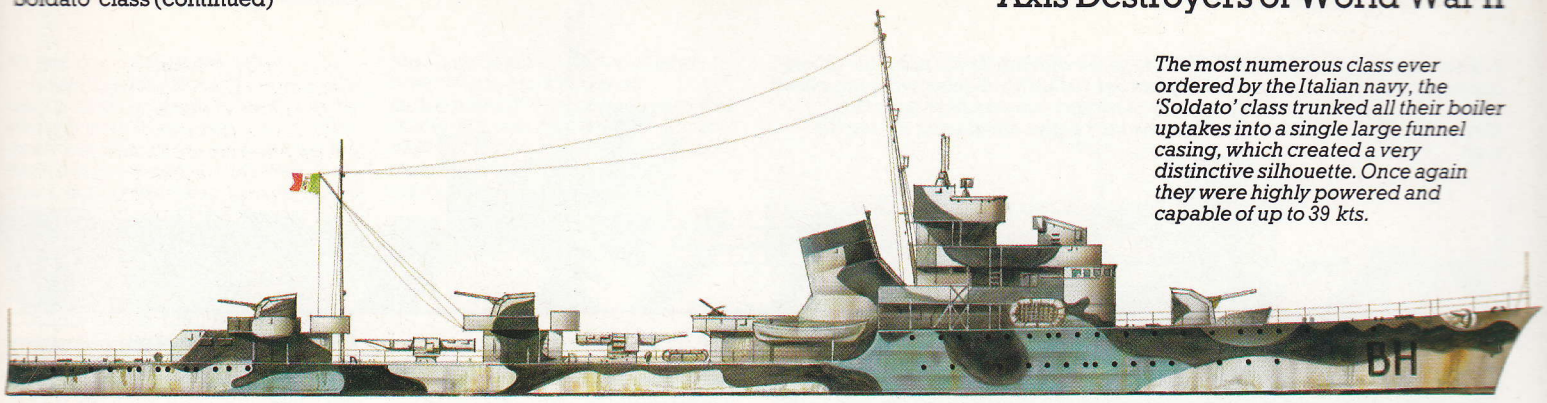
## Specification
**'Navigatore' class**
**Displacement:** 1,945 tons standard and 2,580 tons full load
**Dimensions:** length 107.75 m (353.5 ft); beam 10.2 m (33.5 ft); draught 3.5 m (11.5 ft)
**Propulsion:** two sets of geared steam turbines delivering 37285 kW (50,000 shp) to two shafts
**Speed:** 38 kts
**Armament:** three twin 120-mm (4.72-in) and three single 37-mm AA guns, two twin or triple 533-mm (21-in) torpedo tube mountings and up to 54 mines
**Complement:** 225

ITALY

# 'Soldato' class

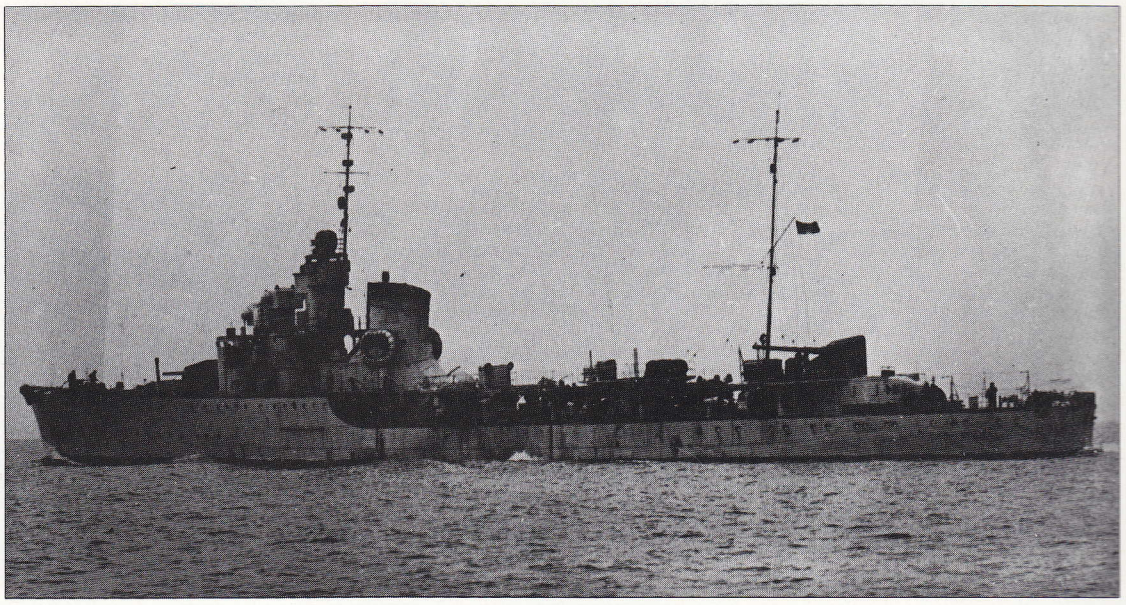
The extensive **'Soldato' class** was the ultimate development of a sequence that began with the four-ship **'Dardo' class** of 1930-2. They used deck space very effectively by successfully trunking all boiler uptakes into one substantial funnel casing. Four 120-mm (4.72-in) guns were carried but, unlike the British disposition, these were sited in two twin mountings, one on the forecastle deck and one on the same level atop a house set well aft, saving both deckspace and topweight. Slightly smaller than their British counterparts, the Italian ships were more highly powered, being deficient only in their torpedo complement, weapons that the Italians never valued very highly. Their distinctive profile became very much associated with the Italian fleet and was repeated in the largely similar **'Folgore' class** quartet built in parallel. A feature was a separate director for each pair of guns, allowing two targets to be engaged effectively and simultaneously.

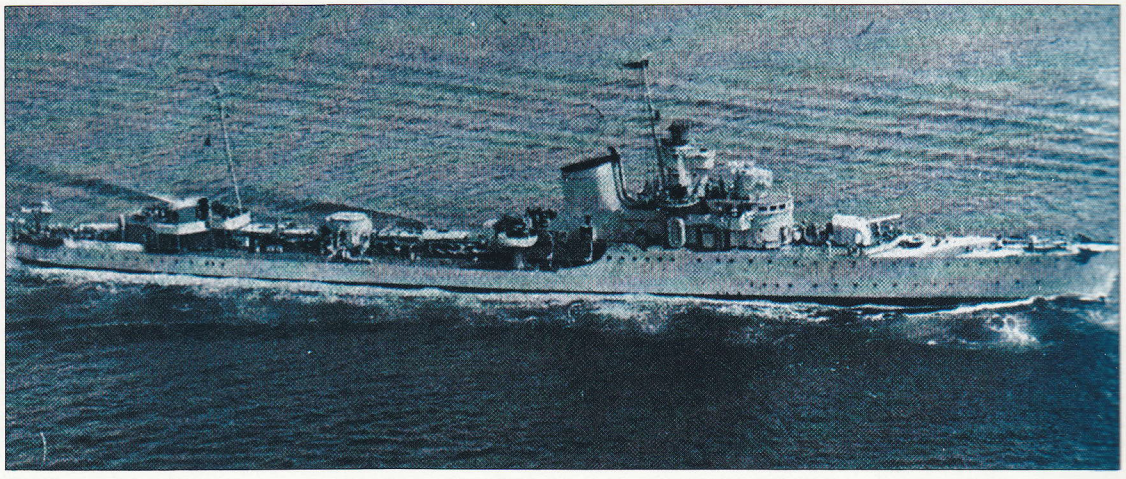
It was to improve seaworthiness and fighting qualities that the four **'Maes-**




*The most numerous class ever ordered by the Italian navy, the 'Soldato' class trunked all their boiler uptakes into a single large funnel casing, which created a very distinctive silhouette. Once again they were highly powered and capable of up to 39 kts.*

*Right: Like many Italian destroyers, the 'Soldato' class emphasized speed at the expense of armament and strength, and the* Lanciere, *seen here, foundered in the storm after the battle of Sirte, not because of British action but simply because her light design betrayed her.*





**trale' class** ships of 1934 were lengthened by nearly 10 m (32.8 ft), with a proportionate increase in beam; in other respects they and the four **'Oriani' class** ships of 1936 were essentially repeats, the latter having slightly increased power.

With war in Europe looming the Italian navy expanded, a 12-ship repeat 'Oriani' order being shared between four yards. All were launched 1937-8 as the first group of 'Soldati', and were the ***Alpino, Artigliere, Ascari, Aviere, Bersagliere, Camicia Nera, Carabiniere, Corazziere, Fuciliere, Geniere, Granatiere*** and ***Lanciere***. Four of these introduced the first major change by taking a fifth 120-mm gun in a single mounting between the torpedo tube groups. The arrangement was kept in all but one of a further series of seven, only five of which were completed.

The *Lanciere*, of the first group, and the 'Maestrale' class *Scirocco* foundered in the gale through which the 2nd Battle of Sirte was fought; they had suffered no action damage and their loss was a reflection on the generally overlight scantlings used in Italian design. Four of the first group and three of the second survived the war. Of these the three were ceded to France and two of the others to the Soviet Union.

### Specification

**'Soldato' class** (first series)
**Displacement:** 1,830 tons standard and 2,460 tons full load
**Dimensions:** length 106.75 m (350.2 ft); beam 10.15 m (33.3 ft); draught 3.6 m (11.8 ft)
**Propulsion:** two sets of geared steam turbines delivering 35794 kW (48,000 shp) to two shafts)
**Speed:** 39 kts
**Armament:** four or five 120-mm (4.72-in) and one 37-mm AA guns, two triple 533-mm (21-in) torpedo tube mountings and up to 48 mines
**Complement:** 219

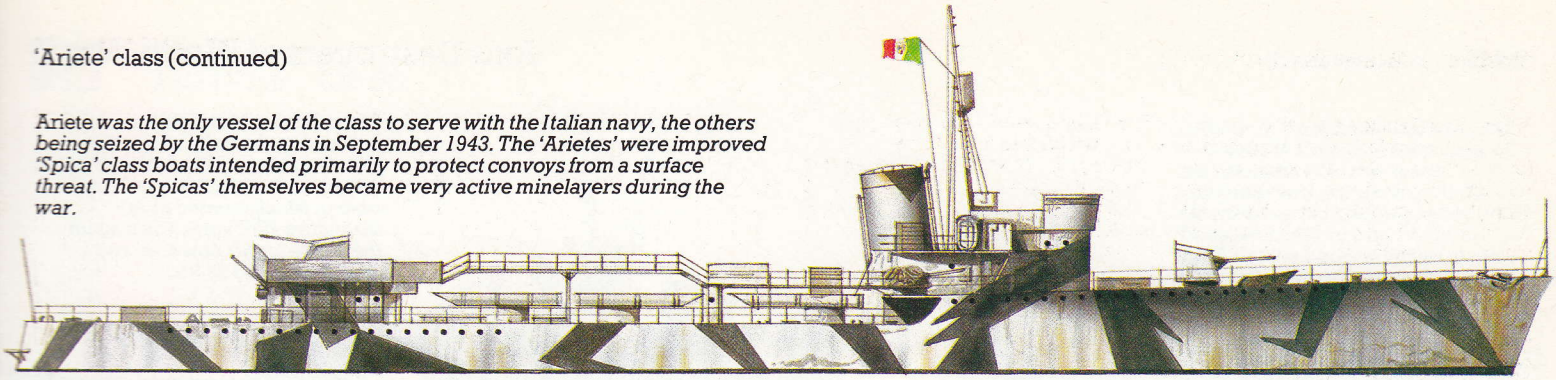
*Scirocco, fourth ship of the similar 'Maestrale' class, also went down in the storm that overwhelmed* Lanciere. *Despite this terrible vulnerability to heavy seas, the 'Maestrales' were judged an adequate design and were the basis for the 'Soldato' class.*

ITALY

## 'Ariete' class

With the 32 **'Spica' class** torpedo boats launched in 1936-8, the Italians were able to adopt a single-funnel arrangement, the more efficient hull being driven at the same speed as the preceding 'Curtatoni' for less power. Their profile was remarkably similar to that of the contemporary 'Oriani' class fleet destroyers, the major difference being the much bulkier funnel casing of the latter, necessary because of extensive trunking from two separate boiler spaces. They also lacked the funnel cap of the torpedo boats. With the 'Spicas' the 100-mm (3.94-in) gun was introduced; only three were carried and they were essentially for use against ships, having an elevation of only 45° and a rate of fire of about eight rounds per minute. Surprisingly, considering their category, they adhered to only four of the small 450-mm (17.72-in) tubes and these were largely wasted by initially siding them as singles, only two tubes thus bearing on either broadside. Centreline twin mountings were later substituted.

The **'Ariete' class** design was only that of an improved 'Spica', whose extra beam demanded about 15 per cent more installed power but allowed greater topweight. This was used by two extra torpedo tubes (these were never uprated to the far more useful 533-mm/21-in), an increase in mine capacity from 20 to 28, or an equivalent increase in depth charge capacity. The Italians used their torpedo boats extensively and effectively for minelaying.



*Ariete was the only vessel of the class to serve with the Italian navy, the others being seized by the Germans in September 1943. The 'Arietes' were improved 'Spica' class boats intended primarily to protect convoys from a surface threat. The 'Spicas' themselves became very active minelayers during the war.*

Not until 1942-3 were the 'Arieti' laid down, the fleet having by then the benefit of combat experience. Over 40 units were planned in an extended programme but, though spread among three yards, only 16 (namely the ***Alabarda, Ariete, Arturo, Auriga, Balestra, Daga, Dragone, Eridano, Fionda, Gladio, Lancia, Pugnale, Rigel, Spada, Spica*** and ***Stella Polare***) were actually laid down. Of these only the nameship was actually delivered to the Italian fleet, a month before the armistice. The remainder, in various stages of completion, fell into German hands, only 13 of them actually seeing service at sea. Only two (*Ariete* and *Balestra*) survived to serve post-war, both under the Yugoslav flag.

### Specification
**'Ariete' class**
**Displacement:** 800 tons standard and 1,125 tons full load
**Dimensions:** length 82.25 m (269.8 ft); beam 8.6 m (28.2 ft); draught 2.8 m (9.2 ft)
**Propulsion:** two sets of geared steam turbines delivering 16405 kW (22,000 shp) to two shafts
**Speed:** 31 kts
**Armament:** two single 100-mm (3.94-in) and two single 37-mm AA guns, two triple 450-mm (17.72-in) torpedo tube mountings and up to 28 mines
**Complement:** 155

GERMANY

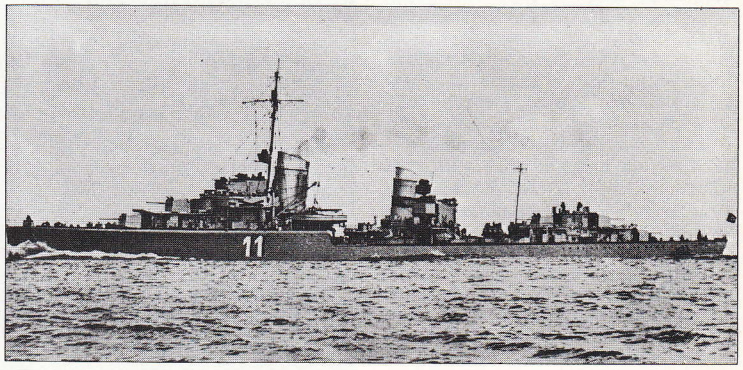
## 'Type 34' or 'Maass' class

When the keels of the first **'Type 34' class** destroyers were laid in late 1934 for launch between 1937 and 1939, the Germans had had virtually no experience in the production of true destroyers since the end of World War I. This lack of continuity was to result in the incorporation of much that was untried, particularly with respect to boilers and machinery, and the ships thus gained a reputation for unreliability. Despite this, they were of conventional layout and more than a little influenced by contemporary British fleet destroyers. Advantage was conferred by extra length, though this was offset by a poorly-designed forward end which, lacking sufficient freeboard and flare, left them very wet ships in any sea. A new 127-mm (5-in) calibre was selected rather than the better-tried 105-mm (4.13-in) size in order to match the weight of standard French projectiles. The new gun proved a reliable weapon but was not dual purpose. Five were carried (three singles aft and two singles forward), each group being capable of separate control with its own rangefinder.

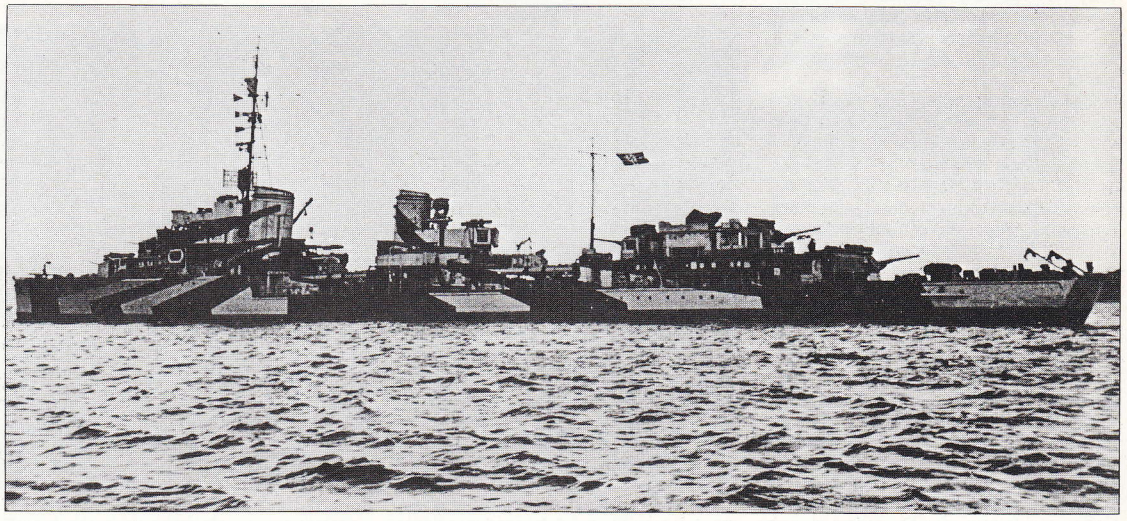
Two quadruple banks of 533-mm (21-in) torpedo tubes were shipped. Like the Japanese, the Germans believed in the weapons, trained in them and used them to good effect when allowed. Four reloads could be carried. The ships were also tracked along both sides of the upper deck to give capacity for 60 mines.

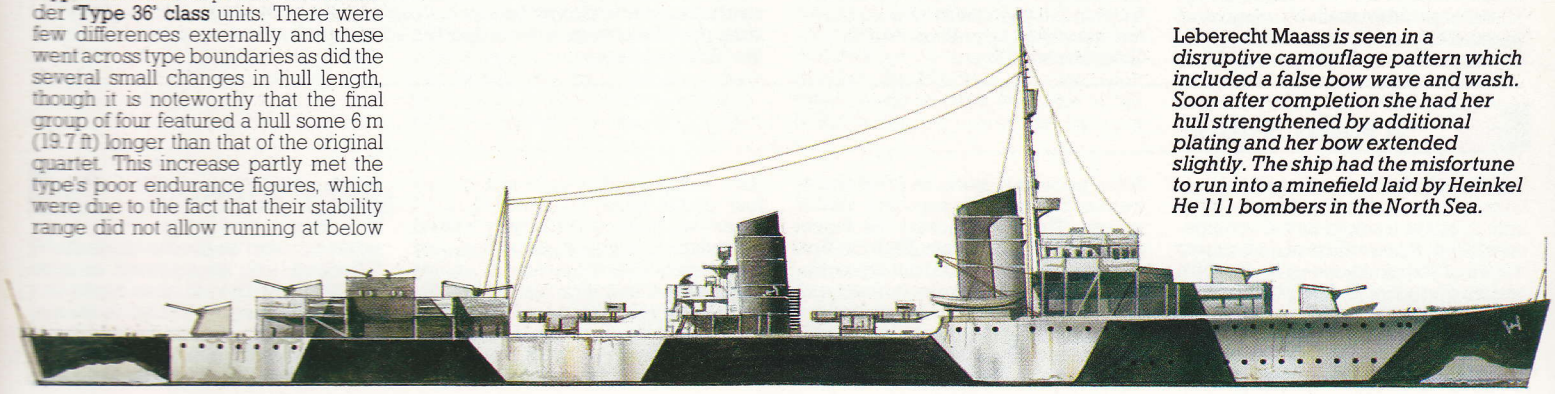
In all, there were 22 named destroyers of fairly homogeneous design but, of these, only the first four were 'Type 34s'. Officially, the next 16 were **'Type 34A' class** ships and the remainder **'Type 36' class** units. There were few differences externally and these went across type boundaries as did the several small changes in hull length, though it is noteworthy that the final group of four featured a hull some 6 m (19.7 ft) longer than that of the original quartet. This increase partly met the type's poor endurance figures, which were due to the fact that their stability range did not allow running at below

*The 'Type 34' or 'Maass' class were the first German destroyers to be built since World War I. Of conventional layout, their only major problem was lack of freeboard, which had disagreeable consequences in heavy seas.*



*Below: The 'Type 34A' class were again armed with new 127-mm (5-in) guns rather than the trusted 105-mm (4.1-in) weapons in order to match the broadside of contemporary French vessels. Some of the later units were lengthened to improve stability.*





Leberecht Maass *is seen in a disruptive camouflage pattern which included a false bow wave and wash. Soon after completion she had her hull strengthened by additional plating and her bow extended slightly. The ship had the misfortune to run into a minefield laid by Heinkel He 111 bombers in the North Sea.*

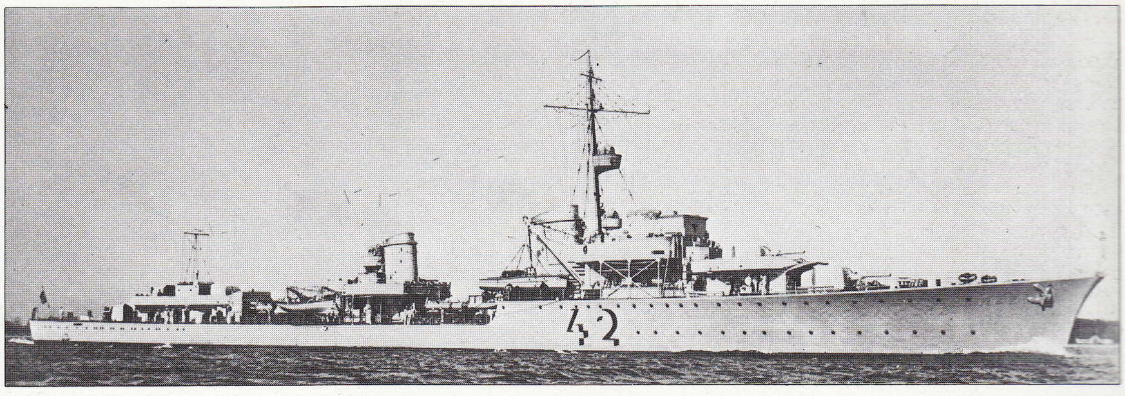
30 per cent bunker capacity.

It was the misfortune of the group to lose 10 of its number at Narvik, mainly through poor leadership. Another five were lost later in the war. During the first couple of months of the war, these ships had contributed greatly to the mining campaign off the east coast that cost the British dear. The ships in the class were the ***Leberecht Maass (Z1), Georg Thiele (Z2), Max Schultz (Z3), Richard Beitzen (Z4), Paul Jacobi (Z5), Theodor Riedel (Z6), Hermann Schömann (Z7), Bruno Heinemann (Z8), Wolfgang Zenker (Z9), Hans Lody (Z10), Bernd von Arnim (Z11), Erich Giese (Z12), Erich Köllner (Z13), Friedrich Ihn (Z14), Erich Steinbrinck (Z15), Friedrich Eckoldt (Z16), Diether von Röder (Z17), Hans Lüdemann (Z18), Hermann Küne (Z19), Karl Galster (Z20), Wilhelm Heidkamp (Z21)*** and ***Anton Schmitt (Z22)***.

### Specification

**'Type 34' class** (as built)
**Displacement:** 2,230 tons standard and 3,160 tons full load
**Dimensions:** length 119.0 m (390.4 ft); beam 11.3 m (37.1 ft); draught 3.8 m (12.5 ft)
**Propulsion:** two seats of geared steam turbines delivering 52199 kW (70,000 shp) to two shafts
**Speed:** 38 kts
**Endurance:** 8150 km (5,064 miles) at 19 kts
**Armament:** five single 127-mm (5-in), two twin 37-mm AA and six single 20-mm AA guns, two quadruple 533-mm (21-in) torpedo tube mountings, and up to 60 mines
**Complement:** 315

Karl Galster *shows off her clipper bow, which was fitted to all subsequent German destroyers. Her machinery was theoretically capable of 40 kts, but wartime shortages of material made maintenance increasingly difficult.*




*Below:* Karl Galster *was the fourth of six units of the 'Type 36' destroyers, which were slightly modified 'Type 34s'. All five of her sister ships were sunk at Narvik, but Z20 survived the war and ended her days in Soviet service in the Baltic, renamed the* Protshnyi. *She was broken up in the 1950s.*

GERMANY

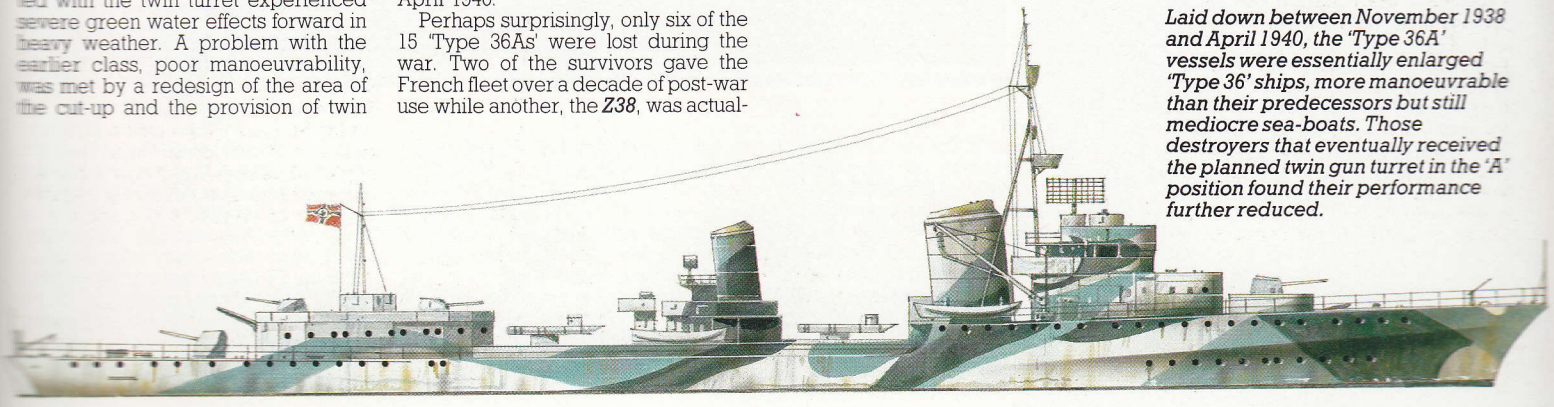
## 'Type 36A' or 'Z23' classs

The **'Type 36A' class** destroyers were war-built and launched in 1940-2, and while the fleet would have preferred a ship enlarged from the 'Type 34' and capable of long-range operation, it received another slight stretch of the original design with the major difference of an increase in main battery calibre to 150 mm (5.91 in). This had 60 per cent greater weight of shot and a better range, but was difficult and slow for handworking. The weight of the two forward superimposed guns was to be cut by substituting a twin turret, but this was long in development and trouble-prone when it finally entered service, and most of the class started their lives with only one single mounting forward which, if it did nothing for their fighting potential, certainly improved their seakeeping. Those that were retrofitted with the twin turret experienced severe green water effects forward in heavy weather. A problem with the earlier class, poor manoeuvrability, was met by a redesign of the area of the cut-up and the provision of twin rudders but, overall, the 'Type 36A' did not appeal to a seaman.

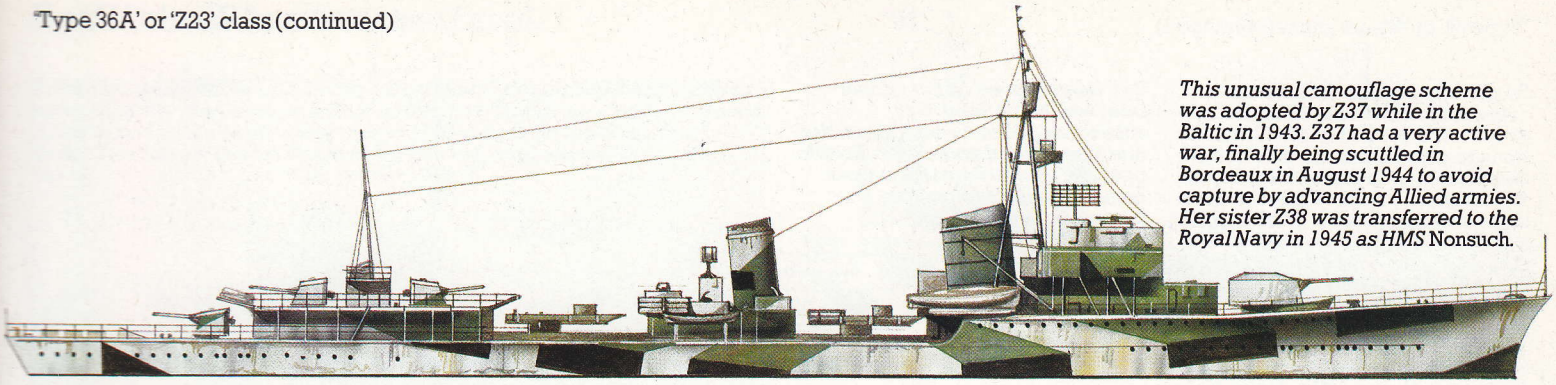
The initial order for the 'Type 36A' comprized ***Z23*** to ***Z30***; seven more, ***Z31*** to ***Z34*** and ***Z37*** to ***Z39*** (to a slightly modified design) were later added. These ships, though unnamed, were popularly known as the **'Narvik' class**, the name originating with the Germans themselves, their Norwegian-based units adopting something of the earlier ships that had been destroyed there in April 1940.

Perhaps surprisingly, only six of the 15 'Type 36As' were lost during the war. Two of the survivors gave the French fleet over a decade of post-war use while another, the ***Z38***, was actual-

*The 'Type 36A' class were enlarged Type 36s, designed to carry 150-mm (5.9-in) guns, although the planned double turret was not always available and single turrets had to do. The larger guns failed to live up to expectation, the heavier shell proving slow to hand-load.*



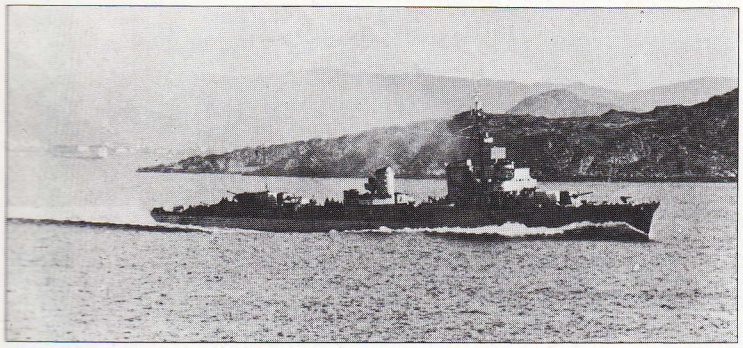
*Laid down between November 1938 and April 1940, the 'Type 36A' vessels were essentially enlarged 'Type 36' ships, more manoeuvrable than their predecessors but still mediocre sea-boats. Those destroyers that eventually received the planned twin gun turret in the 'A' position found their performance further reduced.*



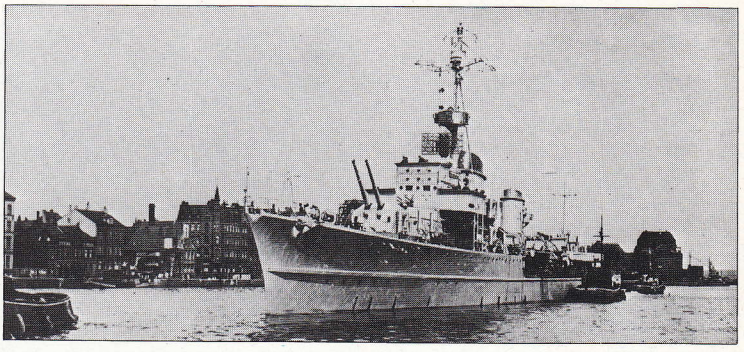
*This unusual camouflage scheme was adopted by Z37 while in the Baltic in 1943. Z37 had a very active war, finally being scuttled in Bordeaux in August 1944 to avoid capture by advancing Allied armies. Her sister Z38 was transferred to the Royal Navy in 1945 as HMS* Nonsuch.

ly commissioned into the post-war Royal Navy as HMS ***Nonsuch*** for machinery evaluation and 'special trials'. The ***Z26*** was lost in March 1942 during the destroyer attack on convoy PQ13; it was in launching a salvo of torpedoes to finish off this ship that the British cruiser HMS *Trinidad* hit herself with a 'rogue' runner: the three German ships involved had already launched about 20 torpedoes in a fruitless attempt to secure the same result!

### Specification
**'Type 36A' class**
**Displacement:** 2,600 tons standard and 3,600 tons full load
**Dimensions:** length 127.0 m (416.67 ft); beam 12.0 m (39.4 ft); draught 3.9 m (12.8 ft)
**Propulsion:** two sets of geared steam turbines delivering 52199 kW (70,000 shp) to two shafts
**Speed:** 36 kts
**Endurance:** 10935 km (6,795 miles) at 19 kts
**Armament:** three single and one twin 150-mm (5.9-in), two twin 37-mm AA and five single 20-mm AA guns, two quadruple 533-mm (21-in) torpedo tube mountings and up to 60 mines
**Complement:** 321



*Z25 cruises purposefully off the Norwegian coast before her conversion to 'Barbara' standard, which gave her an impressive AA capacity of 12 37-mm (1.45-in) and 18 20-mm (0.78-in) automatic weapons. Transferred to the French navy, she served as the* Hoche *until 1956.*



*Z39 was taken over by the Royal Navy in 1945, but transferred to the USA. Whereas many of her contemporaries ended up scuttled in the Skagerrak loaded with poison gas shells, Z39 was finally handed to France and cannibalized for the ex-German destroyers in French service.*

GERMANY

## 'Type 36B' or 'Z35' class

Early experience with their 150-mm (5.91-in) gunned destroyers convinced the German naval planners of their mistake, and seven ships (***Z35, Z36*** and ***Z43*** to ***Z47***) of the same basic hull and machinery were redesigned around the earlier 127-mm (5-in) single mountings. These ships were known as the **'Type 36B' class** but, confusingly, the last two of the group were again relabelled the **'Type 36C' class** when yet another proposed design would have introduced a new twin 127-mm turret and uprated machinery performance. The confusion of types and pennant number sequences about this time were symptomatic of ambitious naval plans running foul of day-to-day priorities in meeting an overextended range of construction and repair demands. In short, the system could not cope, and the *Z43* was the last destroyer actually completed for German service. This was in March 1944 but it was of only academic importance as, by this stage of the war, ocean operations had effectively ceased for the surface fleet, which existed largely in the relative safety of the Baltic.

The three units actually completed (*Z35, Z36* and *Z43*) had a main battery disposition identical with that of the earlier 'Type 34s', but were given a greatly enhanced AA outfit. By virtue of the lower topweight of the 127-mm armament it was possible to ship two twin 37-mm, and three quadruple and three single 20-mm guns, the generosity of which scale reflected the aerial threat at this stage in the war. As all German destroyers could lay mines, the possible increase in capacity to 76 was important.

The minelaying capacity of all three was being utilized on the night of 11/12 December 1944 when, accompanied by a pair of torpedo boats, they were due to lay a field west of the Estonian port of Reval. A combination of faulty navigation and a desire to 'press on' despite darkness and very poor weather conditions found the group straying into an earlier field. Both the *Z35* and *Z36* were blown up with their full loads and their complete crews. The *Z43* survived to support the northern flank of the retreating German armies in the last desperate weeks of early 1945. Finally, damaged by ground mines and bombing, she was scuttled in the Geltinger Bucht.

### Specification
**'Type 36B' class**
**Displacement:** 2,525 tons standard and 3,505 tons full load
**Dimensions:** length 127.0 m (416.67 ft); beam 12.0 m (39.4 ft); draught 3.52 m (11.55 ft)
**Propulsion:** two sets of geared steam turbines delivering 52199 kW (70,000 shp) to two shafts
**Speed:** 36 kts
**Endurance:** 11120 km (6,910 miles) at 19 kts
**Armament:** five single 127-mm (5-in), two twin 37-mm AA, and three quadruple and three single 20-mm AA guns, two quadruple 533-mm (21-in) torpedo tube mountings and up to 76 mines
**Complement:** 321

GERMANY

## 'SP1' or 'Z40' class

The Germans seemed concerned at the potential firepower of the big French destroyers and, perceiving a requirement for ships of their own capable of a degree of independent action, initiated the **Spähkreuzer** (scout cruiser) or **SP** concept. At the beginning of World War II, however the planned number of destroyers was trimmed in view of other priorities. Of the five stricken from the 'Type 36A' programme three (***Z40*** to ***Z42***) were reinstated early in 1941 as an enlarged trio, which were to be followed by another with hull number unspecified. The design passed through several phases before losing favour and being recast into the so-called **'Zerstörer 1941'**, construction being suspended in 1942 and the incomplete hulls being scrapped in 1943.

With range a problem in earlier destroyers, the SPs would have had better endurance conferred by a three-shaft layout, with steam turbines on the wing shafts and cruising-diesel drive on a centreline shaft. They would have been nearly 10 m (32.8 ft) longer than the comparable 'Capitani Romani' of the Italian fleet and, while lacking the latters' speed, would have been still more truly destroyers in concept. Their extra size would have made for steadier gun platforms and justified the 150-mm (5.91-in) main battery. Final innovations were the uprated torpedo tube battery and mine stowage.

Beyond the SPs the Germans worked on a couple of all-diesel designs. The multi-diesel layout was a popular concept with their designers since the proven reliability and economy of those in the Panzerschiffe. Lighter distillate fuels were more readily available in Germany by synthesis than heavy bunker oils, which had to be imported. The **'Type 42' class** embraced initially only one prototype,

**Continued on page 2140**

# The Sinking of HMS *Charybdis*

***Despite the Royal Navy's dominance of north European waters the German surface fleet was not to be underestimated. One cold October night in 1943 found British destroyers and a light cruiser steaming to intercept a blockade runner off Brittany. Unobserved, five German torpedo boats steered a converging course.***

*Below: HMS* Charybdis, *which led the British squadron, was a 'Dido' class anti-aircraft cruiser mounting eight 114-mm (4.5-in) guns in open-backed shields. She carried radar and detected the approach of the Germans, but failed to inform her accompanying destroyers.*

On the evening of 22 October 1943, a powerful Royal Navy squadron left Plymouth, heading rapidly into an overcast night. Comprising the light cruiser HMS *Charybdis*, two fleet destroyers and four 'Hunts', the group possessed command facilities, together with a good torpedo and close-range gun armament. What followed, however, demonstrated that a force strong on paper can be of little use if its component parts have not been drilled into a cohesive whole by exercise and experience.

## Fighting in the Channel

The planned operation was one of a series in the year before the invasion of France, designed to disrupt and discourage enemy coastal movements. These were usually on a small scale, but the brisk skirmishes that they provoked showed consistently that night fighting was very much a gamble, an alley-cat existence where quick reflexes and a measure of good fortune were usually of greater significance than firepower.

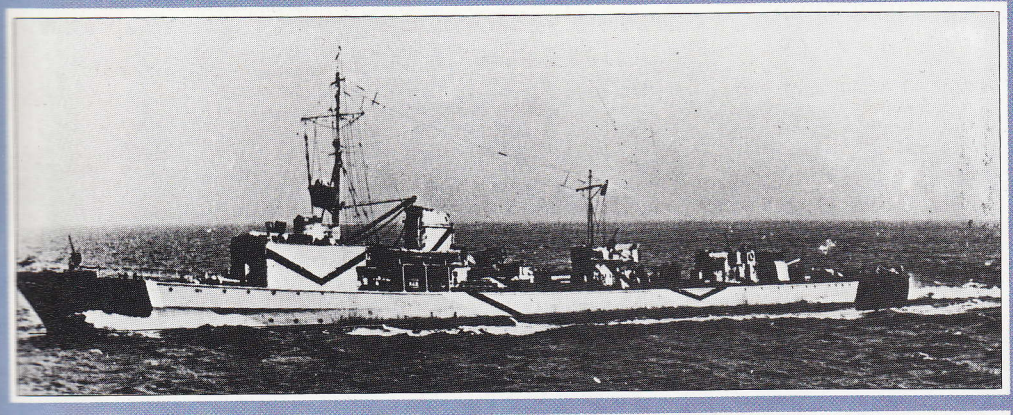
## Blockade runner

This particular night's attraction was the blockade-runner *Munsterland*, which had moved up from the Gironde to Brest and was, correctly, expected to be passed up-Channel. Soon after midnight, the British force arrived at a point 11.25 km (7 miles) off the Brittany coast and turned westward on a planned intercept course. Their quarry was, indeed, heading their way but was close inshore with a small minesweeper escort. Farther out, however, and fully expecting an encounter, were five 'Elbing' class torpedo boats. They were appraised of radar contact with the British as early as 00.25 on 23 October, but the latter (probably as a result of scatter from the rocky backdrop of the coastline) became slowly aware of the German presence only through overheard voice-radio transmissions.

The 'Elbings' were veterans of previous encounters and acted accordingly, moving northward to distance themselves from their charge before rounding eastward on a near reciprocal course to the British. From the outset, the cruiser exercised poor control, failing fully to appreciate the danger and not informing the accompanying destroyers even when obtaining a firm radar contact soon after 01.30. This was more surprising because the ship had seen service in both the Malta convoys and at Salerno. (Together with HMS *Scylla*, she was fitted with eight 114.3-mm/4.5-in guns because of the non-availability of the intended 10 133.4-mm/5.25-in guns). By 01.45 the range had dropped to a bare 3.2 km (2 miles) and the Germans, expecting a hurricane of fire to be unleashed on them at any minute, moved quickly to in line ahead, with 30 torpedo tubes bearing.

They need not have worried as the British were still in formation, effectively masking each other's fire.

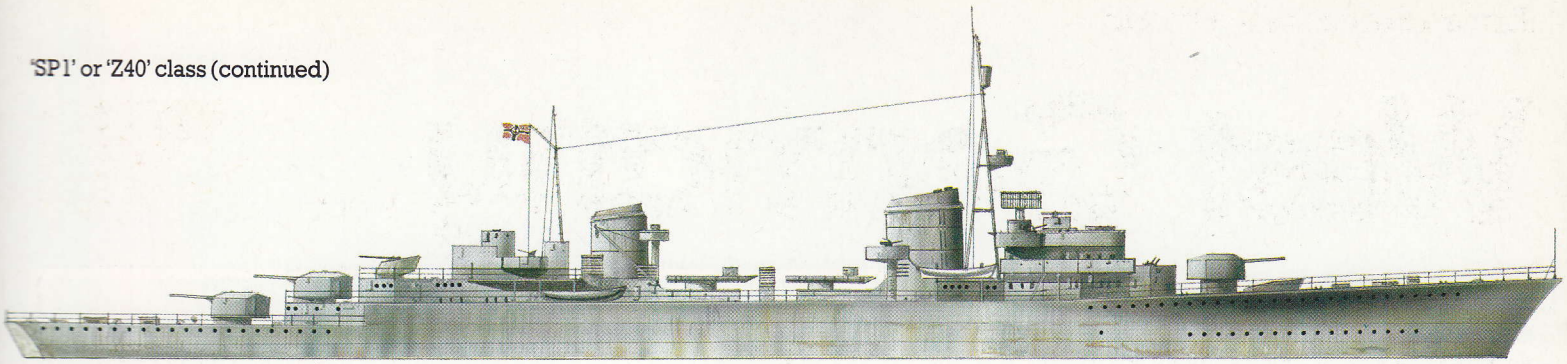
*Below: An 'Elbing' class torpedo boat steams at a leisurely pace, sporting an interesting colour scheme designed to make her hull appear much shorter than it really is. Although often called 'Elbings', half the class were actually built at Schichau. Their main armament was two triple 533-mm (21-in) torpedo tubes.*



## Torpedo salvo

In an attack reminiscent of Japanese tactics, the 'Elbings' launched a total of 24 torpedoes virtually simultaneously, breaking off immediately to the southward. At this point the *Charybdis* fired starshell; this disclosed the torpedo tracks, the menace of which effectively covered the German's withdrawal. Despite violent avoiding action the cruiser was hit twice on the port side and rapidly capsized. In addition, the 'Hunt' class HMS *Limbourne* lost her bows to a torpedo and had to be sunk. So chaotic was the result of their surprise onslaught that the enemy were able to disengage without being challenged or brought under fire. Although the *Munsterland* herself escaped as a result of the action, she had the misfortune to be sunk in the following January after running aground in the Dover Strait.

*Left: German torpedo boats at speed in the English Channel during the Channel Dash of the battlecruisers. RAF operations increasingly restricted the Germans to nocturnal action, but as* Charybdis *learned to her cost their abilities were not to be underestimated.*



*Z51*, a small (114-m/374-ft) ship of only 2,050 tons standard displacement and a four 127-mm (5-in) gun armament. Lack of supply caused the six-diesel/three-shaft layout to be truncated to a four-diesel/single-shaft arrangement. Her value was never known as she was wrecked by bombing while fitting out in 1945. Plans for larger diesel destroyers never reached the metal-cutting stage.

### Specification
**'SP1' class**
**Displacement:** 4,540 tons standard
**Dimensions:** length 152.0 m (498.7 ft); beam 14.6 m (47.9 ft); draught 4.6 m (15.1 ft)
**Propulsion:** two sets of geared steam turbines delivering 57792 kW (77,500 shp) to the two wing shafts and one diesel delivering 10813 kW (14,500 bhp) to one centreline shaft
**Speed:** 36 kts on steam power
**Endurance:** 22250 km (13,826 miles) at 19 kts
**Armament:** three twin 150-mm (5.91-in), one twin 88-mm (3.46-in) DP, four twin 37-mm AA and three quadruple 20-mm AA guns, two quintuple 533-mm (21-in) torpedo tube mountings, and up to 140 mines
**Complement:** not known

*Z40 according to the final plan: Z40 to Z42 were Type 36A class destroyers, cancelled but reinstated in 1941 as an enlarged threesome known as 'Zerstörer 1941'. Their larger hulls would have made a steady platform for the 150-mm (5.9-in) guns. Torpedo armament was also increased.*

GERMANY

## 'T22' or 'Elbing' class

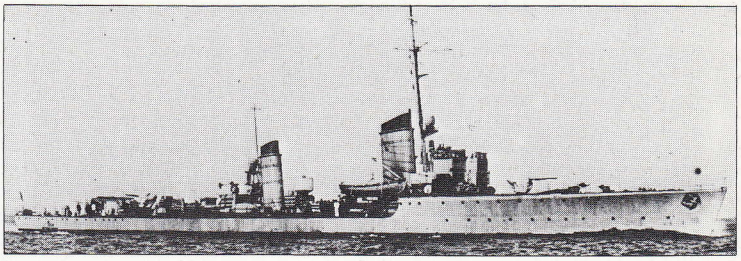
In both world wars the German navy operated so-called 'torpedo boats' which were diminutive destroyer-type ships which, spared the need to operate as units of the main fleet, could be considerably smaller while being capable of carrying the same scale of torpedoes or mines. All wore flag superior 'T' as opposed to the 'Z' of destroyers. Despite their stature they were capable of giving a good account of themselves.

During the 1920s, among the new German fleet's first ships, were built the dozen **'Albatros'** and **'Iltis' class** units. These carried not only their torpedoes but three of the still-potent 105-mm (4.13-in) guns, and proved most versatile in war. These were followed by 21 numbered ships of the **'Type 35'** and **'Type 37' classes**. Here the planners had got it wrong, shrinking the size of the craft and their armament until the ships exhibited all the weaknesses of the smaller 'S' boats while having few of their virtues. The near-common design was characterized by a single heavily-trunked funnel that served both boiler rooms.

These unpopular ships were followed by a very different vessel in the **'Type 39' class**, in which a 15-ship group (*T22* to *T36*) was built by the experienced Schichau yard at Elbing, the town giving the ships their popular name, the **'Elbing' class**. They re-adopted the two-funnelled layout and, despite their lack of raised forecastle, were imposing enough often to be mistaken for fleet destroyers. With an extra 17 m (55.8 ft) of length they could accommodate four single 105-mm guns along the centreline as well as the usual two triple banks of torpedo tubes. The ships were launched in 1942-4.

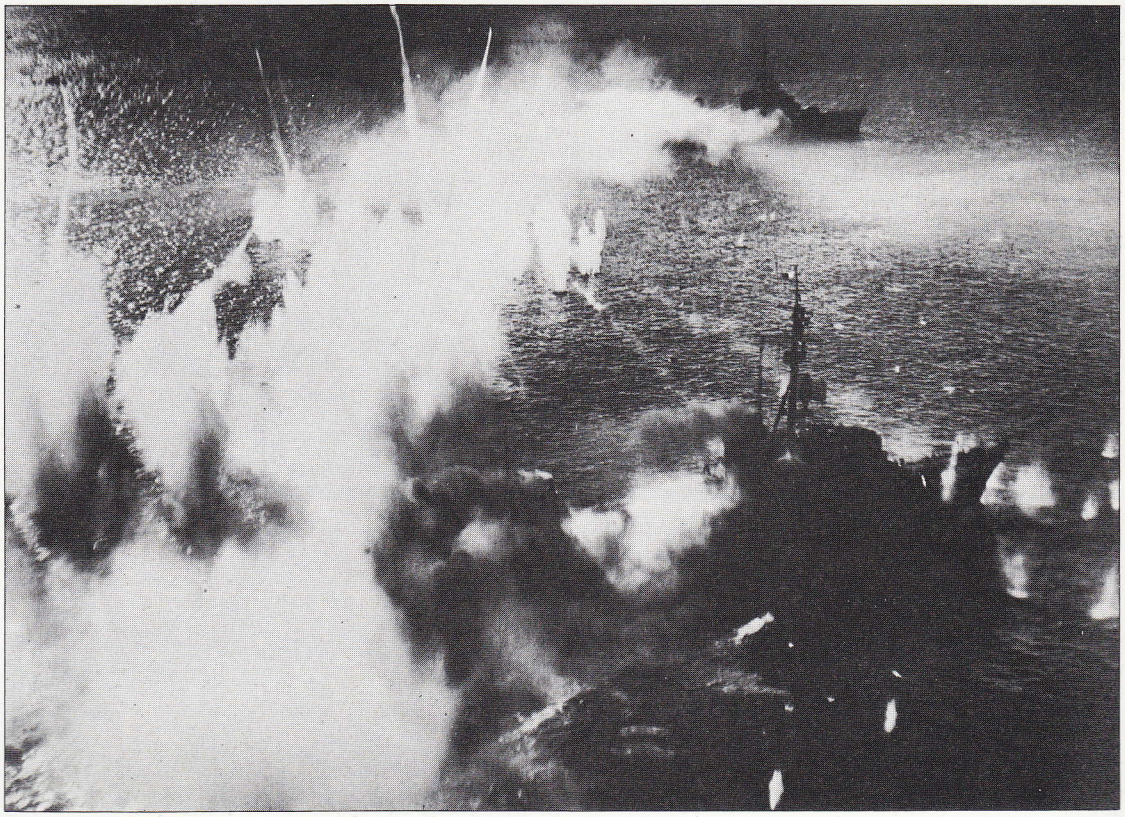
Like most of the torpedo boats, the 'Elbings' were used widely in French waters. They tangled several times with Plymouth-based 'Tribals' off the Breton coast. The *T27* and *T29* were both thus sunk in April 1944, though the *T24* levelled the score by torpedoing and sinking HMCS *Athabaskan*. Two more, the *T25* and *T26*, had already been sunk in the extraordinary daylight action of December 1943 when a mix of 11 German ships, hampered by heavy seas, were savaged by two British cruisers in the Bay of Biscay.

### Specification
**'T22' class**
**Displacement:** 1,295 tons standard and 1,755 tons full load
**Dimensions:** length 102.0 m (334.6 ft); beam 10.0 m (32.8 ft); draught 2.6 m (8.5 ft)
**Propulsion:** two sets of geared steam turbines delivering 23862 kW (32,000 shp) to two shafts
**Speed:** 33.5 kts



**Endurance:** 9300 km (5,789 miles) at 19 kts
**Armament:** four single 105-mm (4.13-in), two twin 37-mm AA and six single 20-mm AA guns, two triple 533-mm (21-in) torpedo tube mountings and up to 50 mines
**Complement:** 198

*Albatros was among the first units built for the navy by the Weimar Republic, and her design reflected German experience in the 1914-8 war. Armed with six 500-mm (19.6-in) torpedoes and three 105-mm (4.1-in) guns, the class served as 'maids of all work' and all six were casualties.*



*Smoke pours from the side of T24 (foreground) as she reels from a rocket salvo fired from RAF Beaufighters at the mouth of the Girond, August 1944. T24 sank; her companion, the destroyer Z24, managed to reach her berth but capsized shortly afterwards.*

# West Germany Part 1

## The Army

The army of the Federal Republic of Germany, the Bundeswehr, was formed in 1956 and was restricted in size to 12 divisions by the 1954 Agreement of Paris. This restriction in size was an attempt to prevent the worst excesses of influence and power that the German army has generally exercised within the German nation's affairs, and further to reduce the impact of the army on society by introducing a new concept of 'citizens in uniform'. In reality neither of these restrictions has prevented the new Bundeswehr from being one of the best trained, best equipped and most powerful of the European armies within the NATO structure.

The Bundeswehr can be divided into two main components, the Field Army (Feldheer) and the Territorial Army (Territorialheer). The Feldheer is the main force of the Bundeswehr, and in time of war would take the field to become part of the NATO forces. The Territorialheer would remain under national control to defend rear areas.

The Feldheer is organized into three corps, I Corps headquartered at Münster, II Corps at Ulm, and III Corps at Koblenz. Between them the three corps dispose of six armoured divisions, four armoured infantry divisions, one mountain division and one airborne division, but to these can be added a number of brigades and other corps troops that make up a total of 66 tank battalions, 62 armoured infantry battalions, 33 armoured artillery battalions, four mountain battalions and nine airborne battalions. There are also 11 armoured reconnaissance battalions, seven corps heavy artillery regiments, 11 divisional artillery regiments, four heavy surface-to-surface battalions, three air-defence regiments (plus one Roland air-defence battalion) and 11 air-defence regiments armed with 35-mm guns. In addition there are three army aviation commands each with one light helicopter regiment, one medium transport helicopter regiment and one anti-tank guided weapon helicopter regiment. There is also a mixed aviation regiment.

I Corps has three armoured divisions each consisting of two or three armoured brigades and one armoured infantry brigade. Each armoured brigade has two tank battalions (110 tanks), one armoured infantry battalion (46 APCs) and one artillery battalion (18 self-propelled 155-mm/6.1-in howitzers). The armoured infantry brigade has two or three armoured infantry battalions (92 APCs), one tank battalion (54 tanks) and one artillery battalion (18 self-propelled 155-mm howitzers).

II Corps has one armoured division, one armoured infantry division and the mountain division. The last has three brigades, whose infantry are carried in wheeled vehicles and whose artillery battalions are equipped with 105-mm (4.13-in) howitzers. II Corps also commands the single airborne division but the three airborne brigades which form part of this division are distributed between the three corps. Each airborne brigade has three parachute battalions and supporting units.

III Corps has two armoured divisions and one armoured infantry division. In addition to the three corps there is in Schleswig-Holstein one independent division that works with the Danish army.

*The Marder MICV is operated by a four-man crew, carries a six-man infantry squad, and has a two-man turret. All Bundeswehr Marders except command versions are to carry Milan ATGWs.*

The Territorialheer is divided into a number of districts under three commands; North (Nord), South (Süd) and Schleswig-Holstein. Under these districts and commands come three types of unit: 12 home defence groups, 15 home defence regiments and 150 home defence companies. The home defence groups are virtually armoured infantry brigades, while the home defence regiments may be likened to infantry regiments. The home defence companies cover a wide range of defence activities and are intended mainly for local use. To the above can be added a further 324 security platoons formed from reservists, and again intended for local use. The Territorialheer also commands all other Bundeswehr units that do not come under the Feldheer, including schools, command staffs and so on.

The Territorialheer also controls a number of units within the above-mentioned structure that do not have exact counterparts in many other armies. They include reservist and conscripted local units who have a combat engineer function to create obstacles and demolitions to delay an advancing enemy. Some of these units are at battalion strength, but many are organized into purely local platoons.

*The Transportpanzer 1 entered service in 1979 and is used for a wide variety of roles including command and communications, engineering and electronic warfare. It is fully amphibious and has an NBC system.*

Included in the Bundeswehr are the Federal Border Guard (Bundesgrenzschütz or BGS), a force 20,000 strong and responsible for the security of a strip of territory 30 km (18.6 miles) deep along the border with East Germany. Intended as a counter to its East German equivalent, the BGS is organized into four commands, each with a number of groups (*Gruppen*) containing two or three battalions. The BGS is a fully militarized police force equipped with armoured vehicles, a few fixed-wing aircraft and 21 helicopters. The BGS includes the now well-known GSG9 anti-terrorist unit.

In numerical terms the Bundeswehr contains about 495,000 officers and men, of whom 230,500 are conscripts undergoing 15-month tours. On mobilization this manpower total could be increased to around 1,250,000.

## Equipment

The basic service rifle of the Bundeswehr is the Heckler & Koch G-3, a 7.62-mm (0.3-in) assault weapon. The sub-machine gun is still the Israeli 9-mm (0.312-in) Uzi, and the machine-gun is the 7.62-mm MG3, the modern version of the World War II MG42. Mortars are mainly Israeli-made 120-mm (4.72-in) Tampella or Soltam models. Personal anti-tank protection continues to be the 44-mm (1.73-in) Panzerfaust portable rocket-launcher, while further up in size the Milan, TOW and HOT guided weapons are used. Anti-aircraft defence is given a high priority, with the Roland missile equipping corps anti-aircraft battalions. The bulk of the anti-aircraft regiments are equipped with 35-mm Gepard self-propelled guns, but elsewhere the 20-mm Rheinmetall Rh202 is widely used.

The artillery equipments cover a wide range. Smallest in calibre are the OTO Melara 105-mm of the mountain artillery battalions. The FH-70 155-mm towed howitzer equips the divisional artillery battalions, but most of the self-propelled howitzer battalions assigned to brigades are the 155-mm M109A2 from the United States. Most of the M109A2s in use have had some local modifications, such as a revised breech mechanism to increase the rate of fire. The Bundeswehr has two corps artillery battalions equipped with the long-range 175-mm (6.89-in) M107 self-propelled gun. One battery of the divisional artillery is equipped with the 203-mm (8-in) M110 self-propelled howitzer. This howitzer has a nuclear capability, but the nuclear warheads are kept under US control, as is the case with warheads of the Lance surface-to-surface battalions. Also included in the divisional artillery is one battalion equipped with the 110-mm (4.33-in) LARS unguided artillery rocket system. It is expected that these will be replaced by the American MLRS (Multiple Launch Rocket System) in the fairly near future.

For armour the Bundeswehr has a large number of equipments: in the APC category alone there are 3,095 American M113s and 2,136 Marder ICVs; more Marders are on order to replace some of the M113s, and on the way are over 400 Transportpanzer 1 wheeled APCs. Numerically the most important tank is the 105-mm gunned Leopard 1 of which some 2,437 are in service, but these are now being joined by increasing numbers of Leopard 2s with 120-mm main guns. In time the remaining American M48s in use will be entirely replaced by Leopard 2s. Other armoured vehicles include the Jagdpanzer 4-5 tank destroyer, armed either with a 90-mm (3.54-in) gun or a variety of guided missiles. A programme to convert all of these to carry the HOT missile is under way. For reconnaissance the Luchs armoured car is used.

Helicopters include the French Aérospatiale Alouette II for observation and general light liaison use. For the medium transport role 107 American Sikorsky CH-53Gs are used. Other helicopters include the ubiquitous Bell UH-1D and a number of Alouette IIIs. For the anti-tank guided weapon role the main type in use is now the PAH-1, the MBB BO105P equipped with HOT, and another 80 BO105Ms are for general utility use.

The equipment of the para-military BGS includes an indeterminate number of ex-British Saladin armoured cars. APCs include large numbers of ex-Swiss MOWAG SW-1s and SW-2s known generally as the BGS Sonderwagen. For airborne reconnaissance use there are 21 Alouette IIs and two Piaggio P.149Ds. A single Dornier Do 27A-3 makes up the strength. To back up its ground strength the BGS is armed with numbers of mortars, 20-mm cannon and some anti-armour weapons.

## Bundeswehr order of battle

There are three corps formed from 12 divisions:
- six armoured divisions
- four armoured infantry divisions
- one mountain division
- one airborne division

These 12 divisions are formed from 36 brigades:
- 17 armoured brigades
- 15 armoured infantry brigades
- one mountain brigade
- three airborne brigades

In battalions terms the Feldheer has the following:
- 66 tank battalions
- 62 armoured infantry battalions
- 33 armoured artillery battalions
- four mountain battalions
- nine parachute battalions

To these can be added:
- 11 armoured reconnaissance battalions
- 11 divisional artillery regiments (M107/LARS)
- seven heavy artillery battalions (M110)
- four Lance missile battalions
- three air-defence regiments
- 11 anti-aircraft regiments (Gepard)
- three army aviation commands (Alouette, BO105, CH-53)
- one mixed aviation regiment

### Territorialheer

There are three territorial commands, five military districts, 29 military region commands and 80 sub-region commands overseeing:
- six home defence brigades, each with two tank, two infantry and one artillery battalions
- six home defence brigades, each with one tank, two infantry and one artillery battalions
- four territorial service support commands
- 15 home defence regiments
- 150 companies
- 324 security platoons
- plus communications, military police and service units on mobilization

*A Leopard 1A4 takes part in Exercise 'Lionheart', 1984. The Leopard 1A3s featured a new welded turret of spaced armour and a distinctive wedge-shaped mantlet; the A4s were the final batch of Leopard 1s, with improved rangefinding equipment.*